Response to Comments – Part 2

Responses to Comment Letter 0179 from
California Coast Keeper Alliance
Dated January 21, 2020

Responses to the Comments from California Coastkeeper Alliance

This document sets forth the Santa Ana Water Board's responses to the comments from California Coastkeeper Alliance (CCKA) on the Tentative National Pollutant Discharge Elimination System Permit and Water Code Section 13142.5(b) Determination (Tentative Order) for the Huntington Beach Desalination Facility (Facility). CCKA's comment letter includes five topic areas with separate comments under each topic area. The following list includes the comments from the CCKA letter:

I. The Santa Ana Water Board has failed to require the Best Available Technology in the Draft Permit.

I.A. Freshwater aquifer drawdown is not a technical feasibility criterion under the Ocean Plan Amendment.

I.B. If aquifer drawdown was a feasibility criterion the Regional Water Board has not conducted a sufficient analysis to determine subsurface intakes are infeasible.

I.C. The Santa Ana Water Board findings that conclude subsurface intakes are economically infeasible for the Poseidon-Huntington Beach ocean desalination facility are not supported by the evidence.

I.D. The Santa Ana Water Board failed to identify the need for the Project, thus allowing a 50 MGD design capacity to rule out the use of subsurface intakes.

I.E. The Santa Ana Water Board has failed to determine whether subsurface intakes are feasible for a reasonable range of alternative intake design capacities.

I.F. The Santa Ana Water Board failed to analyze the Best Available Design independently to minimize marine life mortality.

II. The Santa Ana Water Board has failed to require the best available site to minimize marine life mortality.

II.A. The Santa Ana Water Board has failed to include sufficient evidence in the record to bridge the analytical gap to conclude Segments 4 – 9 are not the best available site to minimize marine life mortality.

II.B. The Santa Ana Regional Board's use of land use constraints, social impacts, and other CEQA considerations to eliminate the remaining subsurface intake sites was unlawful and erroneous under the OPA.

II.C. The Santa Ana Water Board failed to determine the best available site for an open ocean intake to minimize marine life mortality

III. The Santa Ana Water Board fails to use proper mitigation measures and does not require adequate mitigation to address the level of anticipated harm to marine resources.

III.A. The Santa Ana Water Board relies on outdated science and an inaccurate baseline to determine the best available mitigation.

III.B. The Santa Ana Water Board misapplies the Mitigation Ratio Calculator.

III.C. The Santa Ana Water Board failed to require the best available mitigation because the restoration is too small, will not exist long enough to mitigate impacts for the life of the project, and is already being done in another mitigation project.

IV. The Santa Ana Water Board has failed to protect water quality as required by the Clean Water Act.

IV.A. The Santa Ana Water Board must reassess whether Poseidon's discharge can be comingled with wastewater as the best available technology.

IV.B. Complete antidegradation analysis and updated mitigation requirements must be conducted for the revised brine diffuser.

IV.C. The Santa Ana Water Board should require stormwater to be captured and treated by the facility's reverse osmosis system to prevent degradation of water quality and to promote future water reuse.

IV.D. The Draft Permit's effluent limitation for oil & grease and total suspended solids are inconsistent with the goals and requirements of the Ocean Plan.

IV.E. The Draft Permit's toxicity requirements must be revised to be protective of aquatic health.

V. The Santa Ana Water Board is the Lead Agency for the Poseidon-Huntington Beach CEQA Project and has unlawfully segmented its environmental review of the Project.

V.A. CEQA requires a complete environmental assessment of the environmental impacts of the Project.

V.B. The Project has not yet received a full environmental review, despite the existence of the Interagency Permit Sequencing Framework Agreement.

V.C. Regulatory circumstances have changed since the completion of 2010 FSEIR.

The following table provides the Santa Ana Water Board's responses to CCKA's comments:

Comment Numbers	Comment	Response
I	**I. The Santa Ana Water Board has failed to require the Best Available Technology in the Draft Permit.** Poseidon Resources (Surfside) LLC (Poseidon or Discharger) submitted a request to the Santa Ana Regional Water Quality Control Board (Santa Ana Water Board) for a Water Code section 13142.5, subdivision (b) (section 13142.5(b)) determination for the Huntington Beach Desalination Facility (Facility) on March 15, 2016. Water Code Section 13142.5(b) states: "For each new or expanded coastal powerplant or other industrial installation using seawater for cooling, heating, or industrial processing, the best available site, design, technology, and mitigation measures feasible shall be used to minimize the intake and mortality of all forms of marine life."	The Santa Ana Water Board acknowledges that this paragraph introduces six separate comments and are responded to separately for comment numbers I.A to I.F

	The Regional Water Board shall first analyze separately as independent considerations a range of feasible alternatives for the best available site, the best available design, the best available technology, and the best available mitigation measures to minimize intake and mortality of all forms of marine life. Then, the Regional Water Board shall consider all four factors collectively and determine the best combination of feasible alternatives to minimize intake and mortality of all forms of marine life. Based on its evaluation, the Santa Ana Water Board has erroneously determined that the Discharger's proposal uses the best available site, design, technology, and mitigation measures feasible for the facility to minimize intake and mortality of all forms of marine life in compliance with Water Code section 13142.5(b). Subject to chapter M.2.d.(1)(a) of the Ocean Plan, the Regional Water Board in consultation with State Water Resources Control Board (State Water Board) staff shall require subsurface intakes unless they are found to be infeasible. Subsurface intakes were established as the preferred intake technology because they are the best method for minimizing intake and mortality of all forms of marine life. Site- and facility- specific feasibility factors would be evaluated to determine the feasibility of a subsurface intake at all of the possible site locations. An owner or operator will need to consider a wide range of siting options to ensure that the possibility of using subsurface intakes is not eliminated because the siting options were too narrow. Additionally, California has a long history of moving water so the siting locations do not have to be in close proximity to the destination of the product water. Subsurface intakes are required unless the Regional Water Board determines that subsurface intakes are not feasible based upon a comparative analysis of the factors listed for surface and subsurface intakes. The Regional Water Board shall consider the following factors in determining feasibility of subsurface intakes: geotechnical data, hydrogeology, benthic topography, oceanographic conditions, presence of sensitive habitats, presence of sensitive species, energy use for the entire facility; design constraints (engineering, constructability), and project life cycle cost. In this case, the Santa Ana Water Board inaccurately asserts it first individually evaluated alternatives for the proposed Facility for the best available site, the best available design, the best available technology, and the best available mitigation measures to minimize intake and mortality of all forms of marine life. However, below we detail how the Santa Ana Water Board did not evaluate alternatives for site, design, technology, and mitigation individually, but rather used Poseidon's predetermined site, design, technology, and mitigation and then worked backwards in their analysis to justify the project as best available site, design, technology, and mitigation. In reversal of the order mandated in the OPA, this process resulted in little to no minimization	

	of the intake and mortality of marine through best available site, design or technology, but relied entirely on mitigation. And to compound the error, the mitigation is inadequate.	
I.A	I.A. Freshwater aquifer drawdown is not a technical feasibility criterion under the Ocean Plan Amendment. 1. The four corners of the Ocean Plan Amendment do not allow freshwater drawdown to be a criterion for concluding subsurface intakes are infeasible. Freshwater drawdown is not a technical feasibility consideration for the inclusion or exclusion of subsurface intakes under the OPA. The State Water Board made a deliberate decision to remove "impact on freshwater aquifers" as a feasibility criterion under the OPA. On May 1st, 2015 the State Water Board released a Change Sheet that deleted "impact on freshwater aquifers" from the OPA's list of feasibility criteria: "The regional water board shall consider the following factors in determining feasibility of subsurface intakes: geotechnical data, hydrogeology, benthic topography, oceanographic conditions, presence of sensitive habitats, presence of sensitive species, energy use for the entire facility; ~~impact on freshwater aquifers, local water supply, and existing water users; desalinated* water conveyance, existing infrastructure~~, design constraints (engineering, constructability), and project life cycle cost." And on May 6th, 2015 the State Water Board adopted the final OPA without the feasibility criteria of "impact on freshwater aquifers."16 The final OPA does not provide freshwater drawdown as a feasibility criterion and instead states: "The regional water board shall consider the following factors in determining feasibility of subsurface intakes:* geotechnical data, hydrogeology, benthic topography, oceanographic conditions, presence of sensitive habitats,* presence of sensitive species, energy use for the entire facility; design constraints (engineering, constructability), and project life cycle cost." The State Water Board mandated subsurface intakes be used, unless infeasible. As expressed in the OPA, subsurface intakes are the best available technology18 to minimize marine life mortality and protect the marine environment	The Santa Ana Water Board can consider freshwater aquifer drawdown to determine the technical feasibility of subsurface intake systems. At the adoption meeting on May 6, 2015, the State Water Board revised the factors listed in the then-proposed Ocean Plan chapter III.M.2.d.(1)(a).i. to consider as part of subsurface feasibility. While the impact to freshwater aquifers was among the factors the State Water Board eliminated, the commenter misstates the basis for the elimination of this factor—it was eliminated because it was already encompassed by the hydrogeology factor. Consideration of the factors in chapter III.M.2.d.(1)(a).i. facilitates "a comparative analysis of the factors listed . . . for surface and subsurface intakes" as part of determining whether subsurface intakes are feasible. (Ocean Plan, ch. III.M.2.d.(1)(a).) As explained by staff at the adoption meeting, revisions to the list of factors reflected the view that some of the factors were the same for both surface and subsurface and were therefore not relevant to such a comparative analysis. However, other factors were eliminated because they were already included as part of the other factors listed. (State Water Board Meeting (May 6, 2015) video recording, beginning at 16:45 <https://www.waterboards.ca.gov/board_info/media/may2015/swrcb_brdmtg050615_1.shtml>). Moreover, the deletion of a factor did not necessarily reflect a view that the deleted factor could not be considered in the feasibility analysis, where relevant.

	2. The regulatory intent of the State Water Board is clear that freshwater drawdown was not to be used by a Regional Water Board to conclude freshwater drawdown can be used to determine subsurface intakes are infeasible. The May 6, 2015 State Water Board hearing began with a staff presentation on the changes made to the OPA since the last State Water Board Workshop, as highlighted by the May 1, 2015 Change Sheet [See Attachment One for Adoption Hearing Transcript]. One major change was to the feasibility conditions, including the deliberate elimination of aquifer drawdown as a condition under the technology section of the OPA: "… we deleted impact on freshwater aquifers, local water supply and existing users, desalinated water conveyance and existing infrastructure." Board Member D'Adamo questioned these changes, asking what the process was in analyzing and eliminating feasibility factors. Mr. Wyels, Assistant Chief Counsel for the Board, responded, explaining that the factors were eliminated because they are not "relevant to a comparative analysis for any given site, between the feasibility of surface intakes versus subsurface intakes. And that is what … section, III.M.2.d.(1)(a) [of the OPA], is really about." Aquifer drawdown and the other eliminated factors are not related to minimizing the intake and mortality of marine life, which will be reviewed under the California Environmental Quality Act (CEQA) process, and therefore is not necessary to have these factors included as feasibility conditions under the OPA. After the staff presentation regarding the eliminated feasibility criterion and further questions by the State Water Board concluded, a representative from Poseidon, Mr. MacLaggan, gave testimony in opposition of the eliminated conditions. Mr. MacLaggan argued that the State Water Board should restore the five eliminated criteria as technical feasibility considerations, including aquifer drawdown. In response to Mr. MacLaggan's comments, Chair Marcus asked for clarification regarding why State Water Board staff eliminated the five feasibility criteria. Mr. Wyels clarified that staff eliminated the feasibility factors because the factors do not relate to whether surface or subsurface intakes are reasonable for any given site. CCKA then testified in support of the elimination of the feasibility conditions and stated that the remaining feasibility analysis was flawed because it did not look at the true feasibility of subsurface intakes, and instead, immediately jumped to the use of screens in lieu of subsurface intakes. Because screens cannot minimize the mortality of all forms of marine life, the use of screens are viewed as an inappropriate and illegal substitute for subsurface intakes. CCKA further referenced the State Water Board's expert panel which concluded that screens will reduce no more than one percent entrainment for all species. Regarding the eliminated criteria, CCKA reiterated that the factors were eliminated because, as confirmed by staff, the criteria had nothing to	The comment selectively quotes State Water Board staff's statements at the meeting and their responses to questions from State Water Board members. The quotations in the comment were followed shortly thereafter by a statement noting that staff proposed to retain language at the end of chapter III.M.2.d.(1).(a).i that allows a regional water board to evaluate other site- and facility-specific factors: "There is a provision at the end that says that other factors can be considered. So in the situation where one of those factors really would be relevant for a particular site in determining whether subsurface intakes are feasible compared to surface intakes, there's no reason that the Regional Board couldn't consider one of the factors that we're proposing to eliminate." (State Water Board Meeting (May 6, 2015) video recording, beginning at 43:30 <https://www.waterboards.ca.gov/board_info/media/may2015/swrcb_brdmtg050615_1.shtml>) Following Poseidon's comments to the State Water Board, urging the Board to retain the deleted factors in section III.M.2.d.(1)(a).i, Chair Marcus asked for further clarification. In response, staff specifically stated that: "This is not intended to be an exclusive list of things that Regional Board is supposed to evaluate. . . freshwater aquifers may well be something that could be . . . evaluated differently depending on whether its surface and subsurface intakes. . . . [T]hat particular factor is already subsumed within a factor that we're proposing stay here, which is the hydrogeology. Our view was that freshwater aquifers are certainly part of the hydrogeology. And so that is something that we would propose remain in this list of comparative factors." (State Water Board Meeting (May 6, 2015) video recording, beginning at 6:30 <https://www.waterboards.ca.gov/board_info/media/may

	do with whether or not a subsurface intake could be built, and instead looked to the project proponent's desired outcomes. Board Member Doduc responded to CCKA's comments, asking staff to explain their reasoning regarding the remaining feasibility criteria. Staff explained that the remaining feasibility criteria provided additional protection for sensitive species, given the purpose of the OPA is to minimize marine life mortality. Staff further explained that they did not intend the OPA be interpreted in a way that would allow open ocean intakes. The staff felt that they had still included a preference or presumption of subsurface intakes, and members of the State Water Board requested further clarification to guarantee that subsurface intakes were indeed the preferred technology, not open ocean intakes. Finally, the last speaker during the State Water Board adoption hearing of the OPA was Craig Johns, attorney for Poseidon Water, LLC. Mr. Johns testified that the eliminated feasibility conditions should be reinserted based on section d(1)(a) of the OPA, which mandates Regional Water Boards to complete the feasibility analysis under California Water Code section 13142.5(b) and does not include that the Regional Board would be allowed to rely on the CEQA analysis. Based on this condition, Poseidon representative Mr. Johns once again asked that the language be reinserted. After hearing each of testimonies, the State Water Board members stated that they did not agree that aquifer drawdown should be included in the language of the OPA and explicitly chose not to reinsert aquifer drawdown or freshwater aquifers as a feasibility condition in the adopted OPA. The State Water Board also agreed that staff's elimination of aquifer drawdown as a feasibility condition was necessary in order to narrow the feasibility considerations for the Regional Water Boards, as well as take CEQA requirements into account. Board Member Moore, in discussing why the stricken language should not be reinstated said, "And I want to affirm in my mind staff's recommendation to strike those factors. Because I think the Regional Board decision-making should be narrow to the point of 13142.5(b)." Board Member Moore's statement was then seconded by Board Member Doduc. The State Water Board went on to pass the OPA without the additional feasibility language. This exclusion of freshwater drawdown as a criterion was purposeful and done only after much consideration by the State Water Board. For the Santa Ana Water Board to now use aquifer drawdown as an excuse to exclude the best available technology of subsurface intakes and instead use open ocean water intakes is illegal and in direct violation of the State Board's decision to exclude freshwater drawdown as a technical feasibility criterion and the requirements of the OPA.	2015/swrcb_brdmtg050615_2.shtml>) Therefore, the commenter's emphasis on the deletion fails to acknowledge clear statements in the record showing that impacts to freshwater aquifers are appropriately considered as part of the hydrogeology. None of the State Water Board members specifically mentioned impacts to aquifers in their comments prior to voting, and none contradicted the statements by staff that impacts to freshwater aquifers was already included in hydrogeology or the statement that the list of factors was not meant to be exclusive. Nor did the State Water Board require additional language to exclude impacts to freshwater aquifers from consideration under the hydrogeology factor. The State Water Board record for the Desalination Amendment supports an interpretation of the feasibility factors that allows for the consideration of impacts to freshwater aquifers. With regard to Coastkeeper's comments before the State Water Board on the list of feasibility factors in relation to allowing use of screens, Board Member Doduc asked staff to elaborate on how the presence of sensitive species would affect the subsurface feasibility analysis. Staff confirmed that the intent was not to supplant the requirement for subsurface intakes where feasible only because sensitive species are present, but rather to account for different types of subsurface intakes that may be used. Coastkeeper went on to request language requiring that alternative sites that could support subsurface intake be evaluated. Staff then developed language for inclusion in chapter III.M.2.b. that required evaluation of "a reasonable range of sites, including sites that would likely support subsurface intakes."

	Based on the May 6, 2015 State Water Board decision and the current OPA, the only choice for the Poseidon project is subsurface intakes. To do otherwise would be illegal without adequate proof of infeasibility, which staff has not provided. 3. The State Water Board's determination that subsurface intakes are the best available technology would be swallowed if aquifer drawdown was allowed to determine subsurface intakes are infeasible. The OPA appropriately found that subsurface intakes are required for new and expanded facilities as "best technology available" because the use of subsurface intakes eliminate the intake and mortality of marine life. Slant wells, the type of subsurface intake proposed at both the Doheny and Monterey ocean desalination facilities, may withdraw some volume of freshwater if the groundwater they pump is hydrologically connected to both the seawater pumped and the inland freshwater aquifer. In the simplest terms, if a slant well is pumping a mixture of seawater and freshwater, it is still technically functional. So, to find slant wells technically infeasible simply because they withdraw freshwater would swallow the rule to use subsurface intakes as the best available technology. As explained above, the drawdown of freshwater is to be analyzed in CEQA, and is an economic feasibility concern, rather than a technical question. The determination of feasibility, or significant "social" impacts, in the 2010 Final Subsequent Environmental Impact Report (FSEIR) factored in the observation that the construction of slant wells would require temporarily closing the beach during operation of the drilling rig and installation of a pump vault. But given that the 2010 FSEIR was prepared prior to adoption of the OPA, the analysis did not adequately consider a "Statement of Overriding Consideration" that compliance with the law, and the avoidance of marine life intake and mortality for decades into the future, was of greater social value than a temporary displacement of beachgoers. This was certainly the conclusion at Doheny, a beach that is equally if not more popular than southeast Huntington Beach. The 2010 FSEIR must be revised in a Subsequent EIR.	With respect to the second assertion, an interpretation that allows for the consideration of impacts to freshwater aquifers does not "swallow the rule to use subsurface intakes as the best available technology." Each proposed desalination facility will be assessed on a case-by-case basis. The fact that the drawdown of the freshwater aquifer factors into the feasibility for subsurface intakes for the proposed Huntington Beach Desalination Facility does not mean that the same conclusion will be reached for other proposed facilities. Drawdown of freshwater aquifers may occur at varying levels within the aquifer from the use of slant wells depending on the hydrogeology of the site. The hydrogeology at each site will differ and drawdown of freshwater aquifers will not always lead to a conclusion that slant wells are infeasible. While it is true that a slant well may be technically functional while drawing in some freshwater from inland aquifers, to ignore the site-specific effects of such impacts on hydrogeology would ignore valid environmental effects clearly contemplated within the meaning of hydrogeology and the feasibility of subsurface intakes. Dismissing the potential effect on inland aquifers in all cases because some effects on aquifers could be workable and allow for a subsurface intake in a specific case fails to account for the decision-making framework set forth in Ocean Plan chapter III.M., as well as clear statements that such hydrogeological impacts may be considered as part of that decision-making framework. Moreover, the technical feasibility of slant wells for the proposed Facility was not solely based on the drawdown of the freshwater in the aquifer. The Santa Ana Water Board

		determined that slant wells were technically infeasible because of adverse impacts to the Orange County Water District's (OCWD) Ground Water Replenishment System (GWRS) and adverse impacts to nearby wetland ecosystems. The analysis for the feasibility of subsurface intakes is included in Attachment G.1. of the Tentative Order, where Santa Ana Water Board staff evaluated OCWD's GWRS and the potential impacts that were predicted to occur if slant wells were used solely or in combination with a surface intake system. Finally, a subsequent environmental impact report is not required because the Santa Ana Water Board determined that slant wells are not technically feasible. If the Santa Ana Water Board had determined that slants wells were feasible, and the Discharger submitted a revised application that proposed slant wells, then additional CEQA analysis would be required to assess the potential environmental effects of the change. However, that is not the case here. The Discharger has proposed changes to comply with the Ocean Plan (i.e., the installation and operation of wedgewire screens and a multiport diffuser). Those changes were analyzed by the State Lands Commission in the 2017 Final Supplemental Environmental Impact Report. The Discharger has since made modifications to their proposed diffuser design to comport with the recommendations of a neutral, third-party reviewer, and those changes were adequately addressed in the Santa Ana Water Board's CEQA Addendum. (See also response to comment V.)

I.B	I.B. If aquifer drawdown was a feasibility criterion the Regional Water Board has not conducted a sufficient analysis to determine subsurface intakes are infeasible. Even if "freshwater drawdown" was not explicitly removed as a technical feasibility criterion, the Santa Ana Water Board's analyses are still inadequate to demonstrate that subsurface intakes are infeasible. As discussed below, this analysis should be included in a new Subsequent EIR – simply including this analysis as an Addendum to the 2010 Supplemental EIR and 2017 State Lands Commission Supplemental EIR is inadequate under CEQA. Specifically, the HydroFocus review of the proposed facility highlights inadequacies in Poseidon's modeling and provides methods to improve the reliability of the computer modeling, including test wells to ground-truth model outputs. HydroFocus recommended (1) aquifer tests to determine properties of the Talbert Aquifer, the overlying sediments, and the wetland sediments; (2) an assessment of the effects of the lateral model boundaries; (3) correction of inconsistencies in model construction; (4) calibration/verification using water level data; and (5) incorporation of the US Geological Survey MODFLOW Subsidence Package to preliminarily evaluate the subsidence potential due to slant well pumping. 1. HydroFocus's independent review identified limitations and uncertainty with the Geosyntec model and concluded the results were inconclusive until physical tests could verify the computer modeling. Since the modeling used by the Santa Ana Water Board was conducted by Poseidon's hired firm, we requested another expert firm in the field – HydroFocus – to perform an independent review. HydroFocus is a recognized hydrologic expert in the San Francisco Bay Area, San Joaquin Valley, and Sacramento-San Joaquin Delta. Further, HydroFocus has extensive experience conducting the same analyses for the current CalAm – Monterey proposed ocean desalination facility. HydroFocus critically reviewed and analyzed outputs from the groundwater-flow model developed by Geosyntec to evaluate the impacts and feasibility of subsurface intakes for the Poseidon-Huntington Beach facility in the Talbert Gap. Poseidon's groundwater-flow model simulated the effects of pumping 127 MGD of groundwater from 40 slant wells located along the coast and screened in the Talbert Aquifer. HydroFocus reviewed model structure, ran the model to verify output and assess groundwater flow patterns, and evaluated model sensitivity. They used particle tracking to determine the source of groundwater flowing to the slant wells and evaluate groundwater travel times for various scenarios. HydroFocus noted improvements	In comment I.B., CCKA makes three primary assertions in support of their argument that there is a need for further analysis of using slant wells at the Facility. In response to the first assertion, the Santa Ana Water Board and State Water Board staff have reviewed CCKA's HydroFocus 2 report and find that this report does not present any new information that would justify a need to perform aquifer tests or to conduct additional model runs for the following reasons: • The Hydrofocus 2 report used different input values for groundwater elevation along the coast that require changing operational practices of the GWRS. • The Hydrofocus 2 report outcome suggests that operation of slant wells for subsurface intake could be used to beneficially control groundwater elevation in the Talbert Gap. The Hydrofocus 2 Report refers to a 1976 technical paper that recommends operation of a seawater barrier system in the Talbert Gap, using a combination of injection and extraction wells. The 1976 report includes the statement: *"...if [barrier system] operation levels at the injection ridge portion were maintained at about sea level, and extraction trough levels at about 5 feet (1.5 m) below sea level, a seaward gradient could be maintained."* Hydrofocus 2 is suggesting that OCWD could operate its GWRS differently by keeping the groundwater elevation in its inland injection wells at sea level, while Poseidon-operated slant wells maintain an elevation of five (5) feet below sea level. This would be a significant change to OCWD's operation of the GWRS and the Santa Ana Water Board does not have the authority to require such a change.

	that could be made to the analyses and illustrated different outputs and conclusions from the computer modeling when different input variables were included. HydroFocus's independent review concluded that there was not enough data to accurately conclude that the freshwater drawdown predicted in the Poseidon modeling would occur from offshore slant wells in the Talbert Aquifer. HydroFocus conducted a model sensitivity analysis to assess the effects of varying model inputs on model results. Specifically, HydroFocus evaluated the effect on simulated flow to the slant wells from inland groundwater and the wetlands and the average water-level decline due to varying model inputs for aquifer transmission properties (i.e. hydraulic conductivity), pumping rates, well location and length, and water levels at the seawater intrusion barrier. HydroFocus identified model limitations and uncertainty that affect the ability of the model to accurately predict impacts of project pumping. The Poseidon model was not calibrated or verified using observed water level data. The review concluded that there is "very limited information on the water transmitting and storage properties of the aquifers and aquitards in the Talbert Gap on which to base model inputs." Groundwater flow paths suggest that model results may be affected by the lateral boundaries of the model domain. The constant water levels specified for the seawater intrusion barrier assumes that the quantity of injection water will be available to maintain the water levels at the barrier regardless of the impact of the slant well pumping. Variable head cells representing parts of the ocean may result in an inaccurate estimation of the contribution of the ocean to the slant wells. HydroFocus concluded that "[p]umping at lower rates than originally simulated will reduce impacts on the groundwater system." The model was most sensitive to changes in the aquifer properties of the Talbert Aquifer and the overlying sediments. HydroFocus concluded that "[v]arying these properties produced large changes in model-estimated groundwater-level drawdowns and inland flow to the slant wells" and as a result HydroFocus concluded that the large changes in model estimates demands "that more data is needed for these inputs to improve model certainty." Independent analysis found slant wells would improve management of seawater intrusion. HydroFocus's independent review affirmed assertions made during Independent Scientific Technical Advisory Panel (ISTAP) Phase 1 public comment that slant wells would help manage sweater intrusion. HydroFocus concluded that: "Operation of the slant wells will affect the extent of seawater intrusion in the Talbert Aquifer; pumping will likely increase the gradient from inland areas toward the project wells which will enhance the movement of inland freshwater toward the coast and move the seawater/freshwater interface closer to the coastline. This increase in seaward gradient along with capture of seawater by the slant wells will have the effect of reducing the inland migration of seawater."	• The Hydrofocus 2 report contends that their recommended change in OCWD's GWRS might allow Poseidon to use slant wells. OCWD, as the operator of the GWRS, has already set the conditions for use of slant wells that would allow OCWD to continue its operation of the GWRS. Hydrofocus's suggestion that OCWD should reduce the volume of freshwater injected into the barrier contradicts OCWD's operational concerns related to the impact from a slant well system near their GWRS facility. The different input values used by Hydrofocus in their modeling efforts are inconsistent with OCWD's expert opinion regarding the conditions under which a slant well system could be used without impacting GWRS operations, and it is covered in Attachment G of the Tentative Order, Finding 20. Significantly changing how OCWD operates their GWRS is currently not an option. The Santa Ana Water Board relies on OCWD to determine their own requirements to maintain the GWRS. The Santa Ana Water Board recognizes that test well(s) would be an option to calibrate the model; however this is not necessary given the amount of data available that can be used for hydrogeologic modeling to simulate hypothetical slant wells. Hydrogeologic modeling to predict aquifer drawdown is widely accepted as a suitable substitute for the drilling of test wells. To obtain sufficient data for proper calibration, the Discharger would need to install a minimum of two or three wells capable of producing 2,000 to 3,000 GPM. Installation and operation of wells on coastal properties can significantly impede public access and usage of beach areas. In addition, the

	Operation of the slant wells will affect the extent of seawater intrusion in the Talbert Aquifer. Further, pumping will likely increase the gradient from inland areas toward the project wells, which will enhance the movement of inland freshwater toward the coast and move the seawater/freshwater interface closer to the coastline. Recent communications from Geosyntec to Poseidon in response to questions from the Santa Ana Water Board regarding alternative sites analyses and an extended well length have failed to respond to important findings in the HydroFocus review of the initial Geosyntec report relied on by the Santa Ana Water Board. Responses to the Santa Ana Water Board requests for information from Poseidon and Orange County Water District (OCWD) have not addressed the beneficial aspects that offshore slant wells will create for the seawater intrusion barrier. During the initial inception of OCWD's seawater barrier, a system was considered that used both inland injection wells and extraction wells at the coast. This design would have established a "double-barrier" by creating a groundwater "trough" from coastal well pumping, and a groundwater "ridge" from inland injection wells. In the end, the coastal wells were not built because the injection wells on their own were sufficient. Thus, installing a series of slant wells at the coastline, in addition to the existing injection barrier, would create a steeper groundwater gradient, which exceeds what is currently used to protect inland aquifers from seawater intrusion. The groundwater level at which OCWD maintains its injection barrier is termed the "protective elevation". The protective elevation that Poseidon used in its scenarios assumed that OCWD will maintain its current protective elevations. In practice, as noted in the Hydrofocus analysis, the creation of a trough from pumping coastal slant wells would allow OCWD to operate with a lower protective elevation at the injection barrier. This would: (1) Maintain the same protection against seawater intrusion, while lowering the amount of water that OCWD would need to inject into the barrier and making that injection water available for other beneficial uses, and; (2) Lower the coastal groundwater gradient by decreasing the "ridge" caused by injection. As Hydrofocus has shown in their model analysis, these lower protective elevations would result in greater percentages of seawater, and less inland freshwater, pumped by the coastal wells.	process of obtaining property or access to private property along the California coast is typically challenging. It would likely take at least five (5) years total, to obtain permits, install wells, and operate them for a sufficient time period. The time estimated for the entire process of installing and operating test wells includes: • Two or more years to obtain property access and the necessary permits for drilling and installing wells along the beach; • At least one year to install and develop two to three slant wells within beach properties; and • A period of at least one or two years to operate the wells and obtain sufficient data to calibrate the model and evaluate combined intake system feasibility. The Discharger used hydrogeologic modeling to simulate the performance of hypothetical slant wells at the proposed Huntington Beach location. There is sufficient lithological and geophysical data from the vicinity of the proposed site and offshore areas to support the use of a model as a viable alternative to the installation of test wells. Given the presence of faults in the offshore area, and the variable layers of sand and clay in the subsurface at the Huntington Beach location, the Discharger was required to perform multiple rounds of modeling. A total of five separate "generations" of modeling was completed. Each modeling run included further refinement of the input parameters in order to more accurately represent the conditions at the Huntington Beach site, and better simulate the performance of a slant well network. If test wells were necessary to verify the modeling results, then it would take a minimum of two to three wells, given the geological heterogeneity. Note that each well installation would be subject to the above listed challenges for

	It is clear from the recent responses to the Santa Ana Water Board's requests for information that OCWD adjusts the volume of water injected into the seawater barrier to ensure the loss of freshwater to the ocean is maintained at approximately 2.3 million gallons a day, while serving the dual function of fending against inland seawater movement and replenishing the basin for nearby freshwater withdrawals. However, given the benefits of offshore withdrawals of seawater through slant wells on the gradient, it is feasible that OCWD could adjust the volume of freshwater injected into the barrier and dramatically reduce the volume of drawdown of freshwater predicted by the models. While this may mean adjusting the volume of water injected elsewhere in the aquifer to ensure nearby replenishment, it does not mean that freshwater drawdown in the dramatic volumes predicted in the Poseidon modeling is inevitable and consequently infeasible. While OCWD has the authority to object to compulsory adjustments to their management of the seawater intrusion barrier to minimize freshwater drawdown, they cannot simultaneously object to the use of slant wells because that avoidable drawdown renders their use "infeasible." Further, the recent communications posted on the Santa Ana Water Board's project webpage have failed to address the paucity of actual testing of the offshore strata and the conductivity of seawater into the aquifer. The assumptions used in the model regarding the hydraulic conductivity in aquifers and confining layers that underly the ocean has a substantial impact on model predictions. As noted in the HydroFocus report, actual test wells are necessary to make any scientifically sound predictions about offshore vertical conductivity to the aquifer and the slant well intakes, as these variables are a major component of the prediction of freshwater drawdown. In brief, while the Poseidon modeling may be sound given the parameters chosen, important considerations and parameters were excluded in the computer modeling. In both the Doheny project proposal and the CalAm – Monterey proposal, where the project proposals aligned with the regulatory preference for subsurface intakes, more extensive analyses and testing proved that slant wells were not only technically feasible but also included economic benefits. The Santa Ana Water Board must consider HydroFocus's recommendations when evaluating the technical feasibility of slant wells at Huntington Beach. HydroFocus offered several additional steps that can be taken to improve the model and increase confidence in evaluating impacts of the project. HydroFocus recommended (1) aquifer tests to determine properties of the Talbert Aquifer, the overlying sediments, and the wetland sediments; (2) an assessment of the effects of the lateral model boundaries; (3) correction of inconsistencies in model construction; (4) calibration/verification using water level data; and (5) incorporation of the US Geological Survey MODFLOW Subsidence Package to preliminarily evaluate the subsidence potential due to	obtaining property and drilling and operating the wells. Data from individual test wells would provide detailed stratigraphic data and information on capability of seawater extraction from each well, if operated over a period of time; however, the goal of the modeling effort was to simulate the capability of producing sufficient supply water for the proposed Huntington Beach Facility, not to fully characterize and map the subsurface stratigraphy. Regarding the reference to the proposed Monterey desalination plant (Cal Am) - this proposed plant is located in an area that is hydrogeologically ideal for extracting seawater from the subsurface, because the local lithology consists of dune sand deposits that are highly permeable and homogeneous. Cal Am ran a test well for three (3) years, and the preliminary assessment suggests a successful outcome; however, the data are still being contested in terms of feasibility for operation of the desalination plant. Further, the conditions at the proposed Cal Am plant are not relevant to the Santa Ana Water Board's consideration of the Tentative Order. The Cal Am desalination facility still requires review and approval from the Central Coast Water Board under Water Code section 13142.5(b). Regarding the reference to the proposed Doheny desalination plant, it is also located in an area that appears to support slant well systems and that does not have a local seawater barrier system in place. In addition, comparison of the proposed Huntington Beach facility (50 MGD) with the proposed facilities in Monterey (6.4 MGD) and Doheny (5 MGD) is challenging due to the great difference in the size of the facilities. To the extent that the comment

	slant well pumping. The improved model can then be used to more effectively simulate potential impacts and project feasibility. The HydroFocus review highlights inadequacies in the Poseidon modeling and provides methods to improve the reliability of the computer modeling, including test wells to ground-truth model outputs. To date, those improvements to the computer modeling and necessary physical testing have not been conducted. Given this information, the Santa Ana Water Board should require a third-party review of the Poseidon and HydroFocus analyses prior to the adoption of the Draft Permit. We further recommend the Santa Ana Water Board request a third-party independent analysis from the team of experts who conducted similar analyses for the proposed Doheny ocean desalination project. 2. Conducting physical tests for slant well performance and impact on aquifer drawdown is a standard practice for other ocean desalination projects in California. The Santa Ana Water Board's findings are not supported by the evidence because it failed to require Poseidon to perform the standard practice of drilling physical test wells to determine the feasibility of subsurface intakes. Drilling test wells to determine the feasibility of subsurface intakes is a standard practice. Two proposed ocean desalination projects in California are considering subsurface intakes and have conducted physical test wells to determine both projects' subsurface intakes are technically and economically feasible. The Municipal Water District of Orange County (MWDOC) in partnership with five participating agencies, investigated the feasibility of slant wells to extract ocean water for the planned Doheny ocean desalination project. In 2003/04, MWDOC undertook preliminary studies to assess alternative approaches to produce ocean water in the vicinity where the San Juan Creek discharges to the ocean in Dana Point. Options included a conventional open intake, a subsurface infiltration gallery, and various types of beach wells. To investigate the feasibility of a subsurface slant well intake, a phased hydrogeology and subsurface well technology investigation was undertaken. In 2004/05, four exploratory boreholes were drilled along the beach to a depth of 188 feet below the ground surface. In 2005/06, after a thorough review of several technologies, it was determined that the most cost-effective approach for this location was the use of slant wells with a dual rotary drill rig constructed from the beach out to the ocean floor. The CalAm project in Monterey has also conducted physical testing to validate slant well performance. CalAm has operated a test well at the CEMEX property in Marina since April 2015. The water drawn from the test well is "on average 92 percent ocean water – a percentage that continues to increase with time." With those	assumes that a smaller capacity may be feasible, see responses to comments I.D and I.E in this document. In response to the third assertion, because the Santa Ana Water Board determined that slant wells are technically infeasible for the proposed Project, an economic analysis is not required. The technical infeasibility of slant well intake systems is due primarily to the hydrogeological model's prediction of adverse impacts to the OCWD GWRS and nearby wetland ecosystems due to freshwater aquifer drawdown as covered in the second assertion above.

	physical tests showing positive slant well performance – that continues to improve over time – the CalAm project is moving forward with subsurface intakes. Physical testing at the CalAm – Monterey site has also demonstrated the viability of slant wells to help manage seawater intrusion. The project proponents have found that the "[p]roject will actually slow the progress of saltwater intrusion in the Salinas Valley Groundwater Basin (SVGB)." The CalAm project "will draw seawater and brackish inland water from the western edge of the aquifer which, over time, is expected to facilitate the retreat of the seawater intrusion front." Moreover, CalAm is dealing with any aquifer drawdown by recharging "the basin with a volume of desalinated water equal to the amount of brackish groundwater that is drawn by the Project. Cal-Am will return this water to the SVGB by delivering it to the Castroville Community Services District and the Castroville Seawater Intrusion Project, both of which will use the water in lieu of pumping groundwater from the SVGB." The marginal cost of basin recharge was not enough to make the use of subsurface intakes "economically infeasible." The consideration of aquifer drawdown must be included in a Subsequent EIR as an economic feasibility analysis. Nonetheless, Poseidon's own modeling that the Santa Ana Water Board used to conclude slant wells are technically infeasible must be considered inconclusive until physical tests wells are conducted. HydroFocus's review concluded that subsurface intakes would help manage seawater intrusion for the Talbert Aquifer similar to the experience in Monterey. The Santa Ana Water Board's conclusion that subsurface intakes are not technically feasible was premature and inadequate to meet the burden of proof necessary for an exemption to the preference of using subsurface intakes under the OPA to minimize the intake and mortality of all forms of marine life. 3. If freshwater drawdown was a legally permissible factor in subsurface intake feasibility, the Santa Ana Water Board should only consider it in an economic analysis. The Santa Ana Water Board concluded slant wells at Poseidon's proposed site were infeasible due to freshwater drawdown. We hired Dr. Michael Hanemann, Professor of Agricultural and Resource Economics, University of California, Berkeley, to review the economic analysis conducted by ISTAP. From Dr. Hanemann's perspective, freshwater drawdown "is not a valid criterion of technical feasibility – it is an economic consideration." The economist sets up an example to illustrate how drawdown is an economic consideration: suppose "a desalination facility with subsurface slant-wells pumps 100 mgd for a usable supply of 50 mgd of desalinated water, and suppose that a fraction, θ, of the amount pumped actually originates from the freshwater aquifer. Then, when 100 mgd of seawater is pumped, the net additional supply of usable water	

	obtained is (0.5-θ)*100 mgd instead of 0.5*100 = 50 mgd. Suppose that 5% of the amount pumped with the slant-wells originates from the freshwater aquifer (θ = 0.05).” He goes on to state that “each mgd of seawater pumped for “source water” generates a net “product water” supply of 0.45 mgd instead of 0.5 mgd. The main significance of this adjustment is that it raises the unit cost of the water supplied.” OCWD has also recognized the freshwater drawdown as an economic consideration and posited that the cost would equal an increase in the Replenishment Assessment to replace the lost freshwater. Dr. Hanemann states that the unit cost of the desalinated water supply needs to be adjusted to reflect the drawdown of aquifer water. Suppose the cost had been estimated at $2,000 per acre-foot ignoring the drawdown of aquifer water. With the drawdown of aquifer water, the true cost per acre-foot of additional supply from desalination becomes $2,222: The drawdown of aquifer water is a factor that increases the effective cost per MGD supplied via desalination using a slant-well subsurface intake but, by itself, it does not constitute a “fatal flaw.” The effective cost of freshwater drawdown has never been considered in an economic feasibility analysis. The Santa Ana Water Board improperly considered freshwater drawdown to be a technical feasibility issue. If the Santa Ana Water Board is going to illegally use freshwater drawdown as a feasibility criterion, then it needs to conduct a new economic analysis with freshwater drawdown only being considered in the economic analysis.	
I.C	I.C. Santa Ana Water Board findings that conclude subsurface intakes are economically infeasible for the Poseidon-Huntington Beach ocean desalination facility are not supported by the evidence. The Draft Permit appears to rely on findings produced in the ISTAP Studies 1 and 2 to conclude that slant wells are economically infeasible. The ISTAP Studies and findings, however, are inadequate for section13142.5(b) review. During the ISTAP process, we requested the analysis consider feasibility based on the OPA criteria. That request was rejected by the conveners. Consequently, the ISTAP Phase 1 found slant wells were infeasible based on OCWD’s assertion that the wells would result in objectionable freshwater withdrawal. As pointed out above, freshwater withdrawal is not included in the technical criteria listed in OPA. The ISTAP Phase 2 economic feasibility did not include analyses of slant wells.	In comment I.C. CCKA makes four assertions in support of their argument that the Board must prepare a new economic analysis for use of subsurface intake systems at the Facility. The Santa Ana Water Board disagrees with the CCKA comments — the feasibility analysis for subsurface intakes was done correctly. The Ocean Plan defines “feasible” for the purposes of chapter III. M as “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.” (Ocean Plan, p. 62.) The feasibility analysis for subsurface intakes considered the factors listed

	The Draft Permit determined that a subsurface intake gallery (SIG) was feasible at Poseidon's proposed site, but then erroneously relied on the ISTAP study to conclude the SIG was economically infeasible. The Santa Ana Water Board states that the "ISTAP, Phase 2 (Discharger's Appendix G) evaluated the feasibility of a seafloor infiltration gallery and surf zone infiltration gallery and concluded that a surf zone infiltration would be infeasible in this area." However, as stated in Attachment G1 of the Draft Permit, citing the SED, "energy costs" were found to increase by 10% if vertical wells were used: "However, the energy requirements of pretreatment (13 percent) required for a surface water intake may not be required for a subsurface intake. (Water Globe Consulting LLC 2010) This study was performed after completion of the Huntington Beach EIR." This finding in the SED does not support the conclusion that slant wells are economically infeasible: a 10% increase in energy use to pump seawater from a vertical well is more than offset by the energy savings of 13% from avoided pre-treatment operation. And further savings would come from the avoided cost of construction and operation of the unnecessary pre-treatment system. These cost savings are fundamental considerations of life-cycle costs. Yet, despite OPA section M.2.d.(1)(a)(i) requiring analysis of both "energy use for the entire facility" and "project life cycle costs," none of these cost considerations were included in the Draft Permit. 1. The Santa Ana Water Board has failed to demonstrate subsurface intakes would cause Poseidon to operate the desalination project without rendering a profit. Poseidon has a duty, as required by the law, to prove subsurface intakes are not economically viable. The burden of demonstrating economic infeasibility falls squarely on the project proponent, and regulatory agencies should not merely accept the infeasibility claims of the project developers. Rather, regulators must actually study and analyze any claim of infeasibility. Moreover, to pass legal muster, the feasibility analysis may not simply conclude that more environmentally protective options are infeasible because they will place the proponent at a competitive disadvantage or make project financing more expensive or difficult. Rather, to constitute substantial evidence in the record, the feasibility analysis must contain and assess "meaningful comparative data" and concrete information about lender positions. In interpreting feasibility under CEQA, California courts have repeatedly held that the decision record must demonstrate that alternative or mitigation measures are "truly infeasible," not merely undesirable from the proponent's perspective. The appropriate question for the feasibility analysis is whether the project as	in chapter III.M.2.d.(1)(a)i in relation to economic, environmental, social, and technological factors. (See Staff Report for the Desalination Amendment, p. J-67 ["Each of the factors should be considered in relation to social, economic, environmental, and technological impacts."] In the first assertion, the commenter asserts that the use of the ISTAP Phase 1 or Phase 2 report did not cover the economic analysis of slant well intake systems and that this should have been included in the economic analysis. As explained in the response to CCKA's comment I.B. above, the Santa Ana Water Board did not consider whether a slant well system was economically feasible because the slant well intake system was found to be technically infeasible. The Santa Ana Water Board did, however, consider the ISTAP Phase 2 Final Report for the economic analysis that was prepared for seafloor infiltration galleries because, unlike slant well intake systems, seafloor infiltration galleries are technically feasible. The economic feasibility analysis considered life cycle costs, cost of product water, whether project revenues would cover costs, ability to secure project financing, willingness to proceed given seafloor infiltration galleries economic uncertainties, and being able to accomplish the project in a reasonable time. The seafloor infiltration galleries resulted in the project not being economically viable as explained in Attachment G.1 of the Tentative Order, Section 2. In addition, the ISTAP Phase 2 Final Report concludes that a seafloor infiltration gallery is not economically viable at the Huntington Beach location within a reasonable time frame due to high capital costs and only modest reduction in annual operating costs. Page 66 of the report further

	mitigated can be "economically successful" – that is, whether the mitigated project "cannot operate at a profit so as to render it impractical." The ISTAP Phase 2 Report does not consider the economic feasibility of slant wells. Further, it is deficient in any discussion, nor includes any evidence in the record, regarding the profit Poseidon will realize from the project, much less whether a lesser profit would completely preclude Poseidon, another developer, or MWDOC themselves from developing the project with subsurface intakes. Further, the fact that seawater desalination, in and of itself, is dramatically more expensive than alternatives that achieve the purpose of the project must be considered. The stated purpose of the project – to provide additional "reliability" to the local water supply portfolio – broadens the scope of whether more environmentally protective options are infeasible. Significantly, "[t]he fact that an alternative may be more expensive or less profitable is not sufficient to show that the alternative is financially infeasible. What is required is evidence that the additional costs or lost profitability are sufficiently severe as to render it impractical to proceed with the project." That is, an environmentally superior technology or mitigation must be "truly infeasible," not just undesirable from the proponent's perspective. Recent case law makes it clear that the courts will demand a robust, credible, and well documented analysis to support any claim of economic infeasibility, even under the less stringent and more procedural California Environmental Quality Act. The Santa Ana Water Board must evaluate whether subsurface intakes are economically feasible unless the project proponent has proven through a robust, credible and well documented analysis that the additional costs shall be sufficiently severe as to render it impractical to proceed with the project. Further, because the Phase 1 report erred in dismissing slant wells, the Phase 2 report was void of any analyses of the economic feasibility of slant wells and other similar technologies. Dr. Hanemann stated in his expert review that the "absence of an economic analyses of slant wells is a critical error because the construction costs of slant wells are significantly less than the Seawater Infiltration Galleries analyzed in the ISTAP Phase 2 Report." Other ocean desalination projects in California proposing to use slant wells have shown that the technical risks with slant wells can potentially be mitigated and that there would be significant savings in the costs of operation and maintenance compared to the screened open ocean intakes proposed for the Poseidon-Huntington Beach project.	states: "The economic viability of the seafloor infiltration gallery, regardless of construction technique, and for a product capacity of 50 MGD at this off shore location, is highly uncertain and thus the seafloor infiltration gallery option faces financing risks that pose significant barriers to implementation. We conclude that it is unlikely that the unit price for produced water from a desalination facility with a seafloor infiltration gallery intake technology would find a buyer under current and likely future estimates of alterative waters sources through 2033. The very high capital cost in the form of additional interest that overwhelms the savings in pretreatment operating costs provided by the seafloor infiltration gallery intake." Santa Ana Water Board staff agree with the ISTAP Phase 2 Final Report's conclusion regarding the economic feasibility of a seafloor infiltration gallery for the purposes of the water code section 13142.5(b) determination. In the second assertion, the commenter uses subsurface intake systems and slant well intake systems interchangeably. Again, since the Santa Ana Water Board determined that slant well intake systems are not technically feasible, the response to the second assertion of this comment only reflects the economic analysis performed for seafloor infiltration galleries. See response to comment I.B above as it is related to the technical infeasibility of slant well intake systems. The economic analysis in the ISTAP Phase 2 Final Report included an evaluation of a reliability premium for the desalinated water based on the water agency willingness to pay. (See ISTAP Phase 2 Final Report, p. 60.) The report concluded that the additional costs for the seafloor infiltration gallery were higher than the estimated reliability

	Dr. Hanemann "concluded that the ISTAP Phase 1 and Phase 2 reports are inadequate for showing that slant wells are neither technically nor economically feasible according to the requirements set forth in the Ocean Desalination Amendment to the California Water Quality Control Plan for Ocean Water." Therefore, the Santa Ana Water Board has erroneously relied on the ISTAP reports to demonstrate that subsurface intakes are infeasible. 2. The Santa Ana Water Board's reliance on the ISTAP Study is flawed because ISTAP failed to properly consider an appropriate Reliability Premium. The ISTAP should have analyzed the "reliability premium" in its economic analysis of subsurface intakes. Desalinated ocean water is the most expensive source of water globally, but water agencies are willing to pay the cost over cheaper alternatives due to its perceived "reliability." The "benefit" of the project is not simply the water itself; it is the reliability of the water and the solution of purported "unreliability" in the current portfolio. A true cost-benefit analysis would be based on the current unreliability in the portfolio, the additional reliability to the portfolio from the project, and the marginal cost of that additional reliability. Reliability factors must be fully explored before the Poseidon-Huntington Beach facility is approved in its current form. The allocation formula used by Metropolitan Water District (MWD) ensures that much of the "reliability" benefit from the addition of desalinated water in the portfolio accrues to MWD members outside Orange County who have already provided funds to subsidize the project through the Local Reliability Program. A proper economic cost-benefit analysis would include the reliability benefits of the project based on the characteristics of a perceived or real "unreliability" in the portfolio. For example, if the region is perfectly reliable for 9 out of 10 years, then the 10 years of paying for more expensive water only translates to 1 year of reliability. Therefore, the cost of a subsurface infiltration gallery is a minor additional cost to the true economic cost of "reliability" from the project. Reliability of the water supply may also be dramatically reduced by external factors, such as the occurrence of algal blooms. It is unclear how the simultaneous occurrence of an algal bloom during a disruption to imported water deliveries would affect the value of reliability (i.e., the "reliability premium"). As discussed below, subsurface intakes effectively eliminate the risk of plant shutdowns from algal blooms and consequently increase the value inherent in a "reliability premium" for an ocean desalination plant	premium and therefore it was found not to be economically viable. Furthermore, the Santa Ana Water Board asked OCWD to provide additional information related to their willingness to pay a premium for the reliability associated with the desalinated water. In response to the request, OCWD provided a letter on June 26, 2020, that further clarifies OCWD's approach towards purchasing the water from the Facility. OCWD explained that there are many factors that go into the cost of the water, and OCWD's Board will decide whether to purchase the water after the Discharger has their required permits for construction and operation of the proposed Facility and the estimated cost of the water is refined. Also, included in the second assertion are four questions that in summary ask: • How will the water be used? • Should Poseidon be contracting with OCWD, or another water agency? • What should the scale of the project be? • Why build now? The Santa Ana Water Board had the water agencies present their areas of responsibility as it relates to the need for the desalinated seawater to the Board. The presentations by OCWD and MWDOC at the Santa Ana Water Board's workshop on May 15, 2020, provided answers to some of these questions. As to the first question, OCWD affirmed that it is still exploring options for how it will use the water and has not finalized its plans for the water.

	Dr. Hanemann found that if the ISTAP analyses were to be corrected by the Santa Ana Water Board or a future independent review, several questions need to be addressed more transparently: (1) How is the water from the Huntington Beach desalination facility to be used, and priced? Will it be held in reserve primarily for use at times of shortage, and will it be priced specially on those occasions so as to capture the higher value of an increment in water supply during a shortage? Or will it serve mainly as additional baseload supply, and will it be priced no differently than other water sold for baseload supply? (2) Who will contract with Poseidon? It is not obvious that OCWD is the party best placed to be the buyer of this water since it is a groundwater management agency. To maximize the economic value of water obtained by desalination, namely as insurance against disruption of regular surface water supplies, the plant should connect to as extensive a surface water distribution network as possible. Groundwater injection seems like a sub- optimal solution. Perhaps MWD would be a better fit as the party that contracts with Poseidon and would be better placed to maximize the economic value of this water. (3) What should the scale be? Alternatives smaller than 50 MGD should be considered. It could be that a smaller scale desalination plant would have greater economic value as substitute source of water when the conventional surface water sources of supply are disrupted. (4) There is also the question of timing. Why build now – or rather, why build 50 MGD now? Desalination is a relatively modular source of supply. It may not be optimal to invest now to build out the full desalination supply that will be needed in, say, 2060. 3. The Santa Ana Water Board's reliance on ISTAP is flawed because ISTAP failed to assess Life- Cycle Cost Savings, including the avoidance of pretreatment, as required by the OPA. The Santa Ana Water Board cannot rely on the ISTAP conclusions that subsurface intakes are not feasible when the ISTAP never considered the cost savings of slant wells from the avoided need for full conventional pretreatment. Subsurface intake systems use the natural geological properties of sediments and rocks to strain and biologically remove organic matter, suspended sediment, and dissolved organic compounds before they enter the treatment processes. The use of subsurface intake systems improves water quality, increases operational reliability, reduces the pretreatment train complexity, and reduces operating costs. All these factors must be considered when determining "economic feasibility" under the OPA – in particular, the cost and benefit from providing reliability during times of reductions in imported water availability.	It is not within the Santa Ana Water Board's purview to consider the second question regarding which agency is best suited to purchase the water. However, MWDOC did raise the issue of whether MWD would be better suited to purchase the water to spread the costs across the larger region. But MWDOC did not directly opine on whether OCWD was suited to purchase the water. OCWD stated that as the largest water agency in Orange County it is well suited to purchase the water because the groundwater basin is sufficient in capacity. Addressing the third question, OCWD stated that a 50 MGD facility would increase reliability of the water supply by significantly reducing the amount of imported water needed for the OCWD service area. OCWD explained that a 50 MGD facility would benefit from economies of scale and provide the lowest overall unit price for the water. According to OCWD, anything less than 50 MGD would be cost prohibitive. To obtain additional information about actual cost savings for a facility at 50 MGD, Board staff solicited additional information from OCWD about the cost for various facility sizes. Via a letter dated June 26, 2020, OCWD did not provide a direct unit cost comparison; instead they indicate that unit costs would be affected by permitting and the fact that the Facility's buildings would not be able to be scaled down and therefore construction and material costs would remain the same. OCWD does acknowledge that there would be some cost savings associated with pretreatment and reverse osmosis units, but that those costs would not reduce the unit cost of the desalinated water. Finally, related to the fourth question, OCWD stated that a staged approach to the Facility where it started smaller and

	The ISTAP did not consider the cost savings of subsurface intakes by avoiding full conventional pretreatment that is required for the proposed open ocean intake. The ISTAP failed to consider "life-cycle costs" as required by the OPA. Studies have concluded that life-cycle cost analyses show significant cost saving over operating periods of 10 to 30 years. California pilot studies have demonstrated subsurface intakes do not require full conventional pretreatment, have cheaper life-cycle costs compared to open ocean intakes, and that subsurface intakes may produce water cheaper than the proposed Poseidon-Huntington Beach facility. While cost savings may vary based on site specific characteristics, the ISTAP Report is void of any consideration of this critical information in its analysis. International expert studies and California's OPA recognize that the use of subsurface intakes can avoid full conventional pretreatment. Natural seawater contains a variety of macro- and micro-organic components that affect the ocean desalination treatment process. Open-ocean intakes are seasonally clogged in some regions by seaweed and some pretreatment systems are periodically fouled by influx of jellyfish. Natural environmental events, such as harmful algal blooms and red tides, can overwhelm full conventional pretreatment systems and cause temporary shut-downs of ocean desalination plants. In comparison, when subsurface intakes are used, improvements in the raw water quality can lead to reduction in the complexity of pretreatment systems, thereby reducing the need for physical cleaning and the amount of chemicals used, and increasing the operational reliability of facilities (e.g., avoid loss of production during algal blooms). Commonly, feeding higher quality raw water into the primary membrane process leads to a reduction in the rate of organic biofouling, reduced capital cost for construction of pretreatment processes, and reduced operating costs for maintenance, chemical use, and accessory operations. Further, eliminating the use of chemicals required for full conventional pretreatment also eliminates the discharge of these chemicals into the municipal wastewater treatment facilities or direct ocean discharges. A key issue in assessing the economic feasibility of slant wells and other subsurface intakes is how to improve the quality of the feedwater and, as a result, decrease the life-cycle cost of desalination or total cost per unit volume of product water. The use of subsurface intake systems is one method to improve water quality, to increase operational reliability, to reduce the pretreatment train complexity, and to reduce operating costs. Subsurface intake systems use the natural geological properties of sediments and rocks to strain and biologically remove organic matter, suspended sediment, and dissolved organic compounds before they enter the treatment processes. Of course, it is important to add that subsurface intakes also eliminate pre-treatment to remove marine life that has been "entrained" into the system despite the use of small mesh screens, as well as the maintenance costs of keeping the screens free of marine life "impinged" in the process.	built up to 50 MGD would be much more expensive than building a 50 MGD from the start. OCWD reiterated that a 50 MGD facility is the most cost-effective project for them. To address the third assertion and as noted in the response to the second assertion, the commenter uses subsurface intake systems interchangeably with slant well intake systems and the Santa Ana Water Board does not agree that an economic analysis of slant well intake systems is warranted. Refer to the response to CCKA's comment I.B. above. For the seafloor infiltration gallery's economic analysis, the ISTAP Phase 2 Final Report (pages 39 and 52) describes how the economic analysis incorporated the pretreatment requirements for a seafloor infiltration gallery. The pretreatment system was included at reduced cost because of the benefits of the seafloor infiltration gallery, but it was not eliminated as suggested in the CCKA comment because a pretreatment system should still be used for the membrane process when using a seafloor infiltration gallery to avoid particulate entry into the primary process and to protect manufacturers' warranties on membrane life expectancy. Although not included in the manner described in the comment, a lower cost pretreatment system was appropriately included in the life cycle costs analysis of the seafloor infiltration gallery. The commenter cites costs associated with the proposed Cal Am and Doheny desalination projects. Both of these sites have found that slant wells are technically feasible. However, comparing the costs for slant wells for the Facility is not warranted because a slant well system was determined to technically infeasible. The costs associated

	The State Water Board's CEQA documentation for the OPA concludes subsurface intakes eliminate the need for conventional pretreatment, thus reducing capital and operational costs. The natural filtration process of a subsurface intake significantly reduces or eliminates the need for pretreatment requirements. For instance, subsurface intakes generally allow for higher quality raw water to be fed into the intake system, minimizing pretreatment and significantly lowering operation and maintenance costs. Surface intakes have lower capital costs relative to subsurface intakes, although a life-cycle analysis shows that surface intakes result in higher operational costs compared to subsurface intakes. The higher quality of feed water with a subsurface intake reduces capital costs for construction of pretreatment processes. Furthermore, subsurface intakes collect water through sand sediment, which acts as a natural barrier to organisms and thus eliminates impingement and entrainment. This gives subsurface intakes a significant environmental advantage over surface water intakes because mitigation for surface intake entrainment will have to occur throughout the operational lifetime of the facility. Overall, subsurface intakes can lower desalination operational plant costs and minimize associated environmental impacts. The Doheny Pilot Project has demonstrated the significant cost savings of using subsurface intakes to avoid traditional pretreatment. The Doheny Pilot Project demonstrates that conventional pretreatment is not necessary for subsurface intakes, leading to additional capital and operational savings. From four exploratory boreholes, the Doheny Pilot Project discovered that "…[t]he produced water showed a very low silt density index (average around 0.5 units) and turbidity (averaged around 0.1 NTU), indicating excellent filtration by the aquifer which eliminates the need for conventional pretreatment filtration and saves costs." Further, "…the produced water showed no presence of bacterial indicator organisms which were found to be present in high concentrations in the ocean and seasonal lagoon," and that "[b]iofilm growths by the end of the test were found to be less than 10 µ in thickness, a level of no concern for biofouling." Pumped well water was run directly to the test reverse osmosis units continuously for over four months. No fouling or performance deterioration was observed during the test or in the post-membrane autopsy as all the dissolved iron and manganese was easily removed as anoxic conditions were maintained throughout the test period. The MWDOC study concluded that for the Doheny Project, "slant wells are less expensive than open intakes which also require pretreatment systems to remove sediments and organic materials." This conclusion was due to the finding that "slant wells provide highly filtered water via the natural filtration process provided by the marine aquifer, thus avoiding the cost of having to construct and operate conventional pretreatment strainers, filtration and solids handling/disposal facilities." MWDOC "determined from the results of the extended pumping test that the use of a slant well intake system will avoid the need for conventional	with a seafloor infiltration gallery were estimated in the ISTAP Phase 2 Final Report, Attachment G.1 of the Tentative Order, Section 2, and the additional costs as compared to surface intakes were substantial and rendered the use of the seafloor infiltration gallery economically infeasible. To address the fourth assertion and as noted in the second assertion the commenter uses subsurface intake systems interchangeably with slant well intake systems and the Santa Ana Water Board does not agree that an economic analysis of slant well intake systems is warranted. Refer the response to CCKA's comment I.B. above, and comments I.C. for the three assertions. Under the Ocean Plan, "[s]ubsurface intakes may be determined to be economically infeasible if the additional costs or lost profitability associated with subsurface intakes, as compared to surface intakes, would render the desalination facility not economically viable." (Ocean Plan, ch. III.M.2.d.(1)(a)i.) In accordance with the Ocean Plan, the Santa Ana Water Board determined that the additional costs associated with seafloor infiltration galleries, as compared to surface intakes, would render the Facility not economically viable. The Santa Ana Water Board considered and relied on the economic analysis that was developed for seafloor infiltration galleries in the ISTAP Phase 2 Final Report. (Discharger's Application, Appendices ZZZ and AAAA; see also Attachment G.1 to the Tentative Order, Section 2.) The economic analysis in the ISTAP Phase 2 Report evaluated life cycle costs, cost of product water, whether project revenues would cover costs, ability to secure project

	pretreatment costs estimated at $56 million in capital and about $1 million in O&M costs, thus reducing the costs compared to other sites by more than $300 per AF." The ISTAP failed to do any similar analysis demonstrated by the MWDOC study. As such, the Santa Ana Water Board cannot rely on the ISTAP's conclusions. The MWDOC study also compared the total cost of the Doheny Project using subsurface intakes versus the cost estimates of the Poseidon-Huntington Beach project. MWDOC concluded that the: "Poseidon Huntington Beach project unit cost as of February 2013 is around $1,800 per AF, including all costs and assuming a contribution from MET of $250 per AF. The Doheny Desal Project cost, assuming an escalation of debt repayment similar to the Huntington Beach Project at 2.5%, is currently estimated around $1,200/AF including all costs and assuming a contribution from MET of $250 per AF." MWDOC's Doheny study concluded that subsurface intakes do not need full conventional pretreatment because the natural filtration by the aquifer eliminates the need for conventional pretreatment filtration. The Doheny study further demonstrated that the use of subsurface intakes – and the avoidance of full pretreatment – resulted in significant cost savings, including $56 million in capital costs and $1 million annually in O&M costs. And finally, the Doheny study determined that the Doheny Project using subsurface intakes would produce water for $600 per AF cheaper than that of the Poseidon-Huntington Beach open ocean intake proposal. The OPA requires the Santa Ana Water Board to assess the life-cycle costs associated, including the avoidance of pretreatment, with the economic feasibility of subsurface intakes. The Santa Ana Water Board cannot rely upon the ISTAP's findings that subsurface intakes at Huntington Beach are not feasible. The ISTAP Report noted "that the Phase 2 ISTAP was not asked to assess the feasibility of the other components of the SWRO Plant including the pretreatment systems, the membrane system or the brine disposal system." The exclusion of these components in the ISTAP Report is not an acceptable feasibility analysis under the Desalination Ocean Plan Amendment. The Amendment requires Regional Water Boards to consider numerous factors when determining feasibility of subsurface intakes, including "energy use for the entire facility…and project life cycle cost." According to the Desalination OPA's Final Substitute Environmental Document, "[p]retreatment increases costs and energy requirements, and is an additional step that is often not necessary when using subsurface intakes." Both factors were intentionally omitted from the ISTAP Phase 2 Report, but are pertinent to an economic feasibility analysis and are required by a regional board to consider. Furthermore, the OPA requires the project life cycle cost to "be determined by evaluating the total cost of	financing, willingness to proceed given seafloor infiltration galleries economic uncertainties, and ability to accomplish the project in a reasonable time. The consideration of OCWD's willingness to pay for the Facility's water in the economic analysis is appropriate because it goes to the viability of the project—the Facility will not be viable if the Discharger fails to execute a water purchase agreement with OCWD or another water supply agency. Moreover, the ISTAP Phase 2 Final Report accounted for the benefit of increased water supply reliability in assessing OCWD's willingness to pay. (See ISTAP Phase 2 Final Report, p. 13, fn. 1 ["we have factored in a subsidy that MWD provides local communities for developing local water supplies, as well as a premium that OCWD has indicated it is willing to pay for the increased water supply reliability that the desalination plant will provide."].) The Santa Ana Water Board posed the question as to OCWD's willingness to pay for the desalinated water to OCWD after the May 15, 2020 Regional Board workshop to understand how OCWD makes these types of the decisions. They responded in the OCWD letter dated June 26, 2020, when asked if there was an upper limit on how much OCWD would be willing to pay for the desalinated water? Their response was: "An upper limit on how much OCWD will be willing to pay for the desalinated water has not been established. However, OCWD is sensitive to increases in the water supply cost as purchasing water from the project will be funded through an increase to our Replenishment Assessment which is charged for all groundwater pumping within OCWD. An example of this price sensitivity is in the project Term Sheet which includes a provision that the

	planning, design, land acquisition, construction, operations, maintenance, mitigation, equipment replacement and disposal over the lifetime of the facility, in addition to the cost of decommissioning the facility." The ISTAP Report did not adequately analyze all these factors when determining whether subsurface intakes are feasible. ISTAP purposefully ignored assessing the pretreatment avoidance cost savings. The ISTAP did not consider the cost saving of subsurface intakes not needing full conventional pretreatment. Recent investigations of the improvement in water quality made by subsurface intakes show lowering of the silt density index by 75 to 90 percent, removal of nearly all algae, removal of over 90 percent of bacteria, reduction in the concentrations of TOC and DOC, and virtual elimination of biopolymers and polysaccharides that cause organic biofouling of membranes. Economic analyses show that overall seawater desalination plants operating costs can be reduced by 5 to 30 percent by using subsurface intake systems with significant cost savings over operating periods of 10 to 30 years." These important factors in life cycle costs were not included into the ISTAP Report, as required by the Desalination OPA. The intentional omission of pretreatment considerations in the ISTAP Phase 2 Report, and the requirement to include them expressly stated in the OPA renders the ISTAP Phase 2 Report inadequate for granting an exception to the stated preference for subsurface intakes. The Santa Ana Water Board should conduct a new independent study of subsurface intakes at Huntington Beach to consider all factors of a project-life cycle cost, as defined by the Ocean Plan Amendment, including the cost savings over the lifetime of the project from not needing pretreatment for subsurface intakes. The ISTAP should have analyzed the cost savings associated with the use of subsurface intake to avoid pretreatment to properly assess the feasibility of subsurface intake through slant wells. The OPA requires a thorough consideration of life-cycle costs must be conducted before a Regional Water Board can consider an exemption to the preference for subsurface intakes. Further, as documented in the Ocean Plan Amendment SED, it is clear that there are significant life-cycle cost savings from the use of subsurface intakes, as well as avoided discharges of chemicals from the use of conventional pretreatment. The ISTAP did not analyze the cost savings of avoiding pretreatment, but had the ISTAP included this analysis, the analysis would have included considerable cost savings associated with the economic feasibility of slant wells. Dr. Hanemann agrees that "the construction cost for slant wells might be as much as an order of magnitude lower than the cost of the subsurface infiltration gallery considered by ISTAP 2." Further, Dr. Hanemann recognized the Abt Associates economic analysis commissioned by the State Water Board	project will not move forward if the $475/acre-foot MWD Local Resources Program operating subsidy cannot be obtained. "OCWD is closely following the project's permitting process to determine how various conditions and requirements may increase the project's cost. If the project is ultimately permitted by the Regional Board and the Coastal Commission, the OCWD outweigh its additional cost. "You should also realize that assuming the project is fully permitted, the District and Poseidon will negotiate a final water purchase agreement that will be provided to the OCWD Board for consideration. The key term of this agreement is the price OCWD will pay for the project water. The District will negotiate as low a price as possible. OCWD staff cannot provide an estimated upper limit amount that could possibly impact those future negotiations."

	suggests, "there could be significant cost savings for slant wells because they would not need the full conventional pretreatment that is required for the open ocean intake proposed by Poseidon." Dr. Hanemann's review concluded that the "ISTAP 2 report did not consider the cost savings of subsurface intakes when the need for conventional pretreatment is reduced or eliminated, a surprising omission." The Santa Ana Water Board cannot rely on the ISTAP conclusions that subsurface intakes are not economically feasible because the ISTAP never considered the cost savings of slant wells from avoiding the construction and operating costs of full conventional pretreatment required for surface intakes. As compared to open ocean intakes with screens, the use of subsurface intakes likely improves water quality, increases operational reliability, reduces the pretreatment train complexity, and reduces operating costs. The ISTAP failed to consider life-cycle costs of subsurface intakes where studies show significant cost saving over operating periods of 10 to 30 years. While the benefits and costs of using subsurface intakes may be site-specific, the Doheny pilot study demonstrates that subsurface intakes in Huntington Beach may not require full conventional pretreatment, have cheaper life-cycle costs compared to open ocean intakes, and that may produce water cheaper than the proposed Poseidon-Huntington Beach facility. Further, these avoided costs also come with increased benefits in the avoidance of plant shutdowns during algal blooms, and/or from toxic discharge conditions possibly linked to chemicals used in the pretreatment process. The ISTAP Report fails to factor any of this critical information into their economic feasibility analysis because of an intentional decision not to consider pre-treatment, membrane system and discharge components of the proposal – all of which are critical considerations of life-cycle costs. The Santa Ana Water Board needs to determine whether slant wells are economically feasible as defined by the OPA. Due to the ISTAP's flawed determination that slant wells were not technically feasible, the ISTAP did not perform an economic analysis of whether slant wells are economically feasible. The Santa Ana Water Board cannot rely upon the ISTAP's determination that slant wells are infeasible because it incorrectly dismissed slant wells as technically infeasible, and because a proper economic feasibility analysis was never conducted. Before the Santa Ana Water Board can approve an exemption to the Ocean Plan's preference for subsurface intakes to minimize the intake and mortality of marine life, an independent analysis of whether slant wells are feasible under the OPA is necessary. Further, real world construction costs demonstrate the feasibility of subsurface intakes in California. Estimating the cost of developing slant wells is arguably a site-specific task. The cost of mitigating for	

freshwater drawdown, contaminated water, and potential well performance varies due to individual site characteristics. However, developing slant wells is clearly a lower cost alternative compared to the estimates for developing a SIG in the ISTAP Phase 2 report. Therefore, the ISTAP conclusion that subsurface intakes are not economically feasible is inadequate for an exemption to the Ocean Plan's preference for subsurface intakes.

Below we use real world slant well cost estimates to demonstrate the significant cost savings of constructing and operating slant wells as compared to the infiltration galleries. The existing slant well cost estimates demonstrate that slant well construction cost about $120 to $150 million per MGD as compared to the ISTAP's cost estimate for infiltration galleries at $1,000 to $15,000 million per MGD. The CalAm cost estimate also demonstrates that economies of scale may provide additional unit cost savings from higher production capacity.

First, a report on the feasibility of slant wells for the proposed Doheny project was finalized in January 2014. The proposal was a facility producing 15 MGD of potable water based on a 30 MGD withdrawal of source water through slant wells. The estimated cost of constructing the intake and raw water conveyance system was $44,759,000.128 For purposes of rough cost comparisons, that cost estimate is approximately $1.5 million for each MGD of water withdrawn. Extrapolating that cost estimate to the proposed 100 MGD intake for the Poseidon-Huntington Beach project results in an estimated construction cost of $150 million.
Second, cost estimates for developing slant wells for CalAm – Monterey project were prepared in 2015. The winning bid estimated the cost of constructing slant wells at a lower per unit cost than the Doheny estimate:

No. of Wells	7	9
Total Well Production Capacity (MGD)	22.2	28.5
Well Construction	$19,424,000	$24,746,000
Design and Construction Management	$ 2,136,640	$ 2,227,140
Wellhead Completion and Equipping	$5,250,000	$6,750,000
Total	$26,810,640	$33,723,140
Cost Per Well	$3,830,091	$3,747,016
$/MGD of Intake Capacity	$1,208,994	$1,182,770

	This cost estimate of approximately $1.2 million per million gallon of intake volume is marginally lower than the Doheny per unit cost estimate for constructing slant wells. Also, importantly, this bid shows that there are potential "scale economies" for drilling more wells at a site to withdraw increased volumes. Regardless of which estimate for slant well construction (Doheny or Monterey) is used, this cost is a small fraction of the ISTAP cost estimate of $1 billion to $1.5 billion for constructing galleries. While a site- specific analysis is required, a rough estimate for developing slant wells for a 100 MGD withdrawal and conveyance to the treatment plant would be in the range of $118,277,000 (CalAm 1 MGD estimate times 100) to approximately $150,000,000 (approximate Doheny 1 MGD estimate times 100). While these are admittedly rough estimates, and actual cost estimates and any economies of scale would be site-specific, the ISTAP Phase 2 report is void of any cost and economic analysis of a system of slant wells compared to a seawater infiltration gallery and/or the proposed addition of screens to the existing open ocean intake. Real California projects demonstrate the voided costs of slant wells compared to screened open ocean intakes. Studies show that slant wells may have significant life-cycle cost savings compared to open ocean intakes. For example, there are cost savings from eliminating the need to construct full conventional pre-treatment required for open ocean intakes, as well as operation and maintenance cost savings from not including full conventional pre-treatment. For example, the Doheny report estimated that annual savings from operation and maintenance costs by avoiding the need for full conventional pretreatment were approximately $1 million for a 30 MGD intake system. Arguably, the annual savings from avoided operation and maintenance costs for the proposed Poseidon-Huntington Beach project would be approximately 3 times the savings for the proposed Doheny facility. However, slant wells may have additional operating costs. For example, if the slant wells withdraw some inland freshwater, that adds to the unit cost of the product water to replace the lost freshwater. Further, there may be costs for mitigating the risk of source water contamination and/or partial well failures to produce the intended volume of 100 MGD intake. These potential additional costs need to be identified and included in the economic feasibility analysis. The Santa Ana Water Board needs to consider avoided risks when analyzing whether subsurface intakes are feasible. Scientific papers recognized in the OPA Substitute Environmental Documentation (SED) found that subsurface intakes have a benefit of eliminating risks of damage to the reverse osmosis treatment train and/or the risk of having to shut down the plant during natural occurrences like algal blooms. And experience	

	with unplanned shut-downs at the recently opened Poseidon-Carlsbad facility shows the papers' analysis of risks from using open ocean intakes are valid and have been confirmed in Southern California. In conclusion, the ISTAP Phase 1 report erred in concluding slant wells were not technically feasible. This in turn resulted in an inadequate analysis of all available subsurface intakes for economic feasibility, and the ISTAP Phase 2 Report failed to document the reliability benefits of subsurface intakes protecting against unplanned shutdowns of the project. This is a critical omission given that the economic feasibility of the project itself is dependent on showing a rationale for the so-called "reliability premium." That is, arguably, paying the "reliability premium" is only a sound economic choice if the project actually produces the reliability it claims. The added benefit of insurance against plant shutdowns provided by slant wells, especially during times when imported water is in short supply, is an important consideration in determining whether or not a project is economically feasible. Therefore, the implication that all subsurface intakes are not economically feasible is inadequate as evidence that the Poseidon proposal should be exempted from the stated regulatory preference mandating subsurface intakes to minimize the intake and mortality of marine life. The Santa Ana Water Board cannot rely upon the ISTAP's determination that slant wells are infeasible because it incorrectly dismissed slant wells as technically infeasible, and a proper economic feasibility analysis was never conducted. The Santa Ana Water Board must produce an independent new technical and economic feasibility study prior to considering an exemption to the Ocean Plan preference for subsurface intakes. 4. The Santa Ana Water Board cannot rely upon the ISTAP's economic feasibility analysis for infiltration galleries because a 'willingness to pay' standard must include a cost-benefit analysis. ISTAP incorrectly interpreted the Desalination OPA's term of "not economically viable" to mean what a local water agency was willing to pay. The Report finds that an "open ocean intake option for a product capacity of 50 MGD may be economically feasible in the near future, depending on outcome of negotiations with OCWD." The ISTAP rationalized this conclusion by stating that: "Under the current term sheet, OCWD might be willing to pay these water costs in 2018 (Figure ES-1). The corresponding unit cost using a 7% discount rate is $2,189/AF. Our analysis indicates that OCWD would be willing to pay this amount for water in 2024. Therefore this option may be economically viable, consistent with the Ocean Amendment definition of economic feasibility."	

	A project proponent cannot self-select what constitutes economic feasibility. If a project proponent's self-defined price for the product water is accepted as a "willingness to pay" baseline, any project proponent can easily negotiate a Water Purchase Agreement with a participating agency and have a term sheet approved by a water agency pre-determining the cost of using an existing open ocean intake. Or, if the proponent is a water agency, they can simply draft a project outline for themselves based on the cost (or absence of any cost) for utilizing an existing open ocean intake and self-approve their willingness to pay. The ISTAP's willingness to pay standard leaves California with a dangerous precedent of allowing project proponents to ignore their legal requirements to use the best available technology to minimize marine life mortality. An existing open ocean intake may, at least in the short-term, be cheaper than implementing the best available technology; however, the Desalination OPA makes clear that "[s]ubsurface intakes shall not be determined to be economically infeasible solely because subsurface intakes may be more expensive than surface intakes." To get around this barrier, the ISTAP has interpreted "not economically infeasible" to mean "willingness to pay" based on a term sheet. What a water agency is willing to pay – based on a term sheet – does not mean the cost of a subsurface intake is economically inviable. Further, because the ISTAP 1 erred in excluding slant wells as technically infeasible, the ISTAP 2 conclusions are fatally void of a thorough and proper analysis of all subsurface intake alternatives. Dr. Hanemann's expert review concluded that the ISTAP erred by using an economic feasibility standard of "willingness to pay." Clearly the test for "economic feasibility" of subsurface intakes is not to simply show that financial benefits outweigh the financial costs and/or lowered profits for the project applicant. As an economist, Dr. Hanemann argues "that reasonableness in a water purchase agreement requires some form of a cost-benefit test. Whether or not an item is economically practical is determined in large part as a function of the benefit that it generates, and by how those who receive the benefit value it." One cannot meaningfully decide that an item is too costly without also considering its benefit. Dr. Hanemann summarized that a "purely cost-based determination without reference to benefit is neither rational nor reasonable." The ISTAP Phase 2 Report interprets the criterion for the economic viability of an intake technology as an amount "that OCWD might be willing to pay for the water supplied" by the proposed Poseidon facility. Dr. Hanemann concludes that from "an economic perspective, that interpretation is very problematic." The mere fact that "OCWD states it is unwilling to pay for a subsurface intake for the proposed Huntington Beach facility is not, by itself, a meaningful demonstration of economic non-viability." One has to know what factors were being taken into consideration when the economic viability was being assessed by OCWD.	

	Dr. Hanemann finds that two factors are "certainly relevant: (1) The reliability premium – the economic value of the heightened reliability associated with desalinated water compared to other sources of water supply for Orange County. And (2) the economic value of the environmental damage avoided when a subsurface intake is used instead of an open ocean intake. There is no evidence that either factor was properly considered by OCWD or by the ISTAP reviews." The ISTAP Phase 2 Report states that it evaluated the price that OCWD might be willing to pay for water from the Poseidon facility "using OCWD's Water Purchase Agreement Term Sheet with Poseidon … as a starting point and assessing the change in that price over time with appropriate escalation factors." It elaborates: "We based the OCWD water price on the amount that OCWD will likely have to pay for water supplied by the Metropolitan Water District (MWD) of Southern California in the future (which OCWD would rely on in the absence of the desalination facility). On top of this price, we have factored in a subsidy that MWD provides local communities for developing local water supplies, as well as a premium that OCWD has indicated it is willing to pay for the increased water supply reliability that the desalination plant will provide." The ISTAP Phase 2 Report continues: "Consistent with our understanding of the ongoing contract discussions, in our projections we assume that the reliability premium amounts to 20% of MWD's Tier 1 water price for 10 years after construction. The premium drops to 15% of the Tier 1 price for the next 10 years, to 10% for 10 more years, to 5% for ten years, and then finally to 0%." Dr. Hanemann had two comments on this calculation. First, if this calculation were intended as an estimate of the reliability premium associated with a drought-proof water supply from desalination, it entirely lacks foundation. Where does the 20% premium come from? Why is the premium not 40%? Or, 17%? The value used for the reliability premium appears to be an after-the-fact justification for the cost of seawater desalination, not a meaningful analysis of the final customers' willingness to pay for additional reliability. Second, Dr. Hanemann found "these estimates have no credibility as a reliability premium." It appears unlikely that the economic value of increased reliability for water supply in Southern California would decline over time, having a lower value in 2030-2039 than in 2020-2029, a lower value still in 2040-2049, and zero value from 2060 onwards when the population of Southern California will be growing over time, and climate change will likely reduce Southern California's effective surface water supply compared to the present. It is implausible to presume the projected economic value of increased reliability in Orange County's water supply will decline over the next 40 years and will be zero from 2060 onwards.	

	Dr. Hanemann's expert review concluded that the ISTAP analysis is missing 3 key components to properly evaluate subsurface economic feasibility at Huntington Beach. The expert report provided by Dr. Hanemann may assist the Regional Board in understanding how a proper economic feasibility analysis should be conducted. He states that there is a "technically correct way to estimate the value of a more reliable source of water supply for OCWD as compared to a less reliable source of supply." It would involve three general components. First, one has to measure the change in the overall reliability of OCWD's water supply portfolio with desalinated water from Huntington Beach versus without it. This would be based on (i) assumptions as to the composition of OCWD's water supply portfolio in 2020-2029, 2030-2039, 2040-2049, onward, with and without the supply from Poseidon, and (ii) probabilistic forecasts of the changed occurrence of shortage (i.e., projected annual demand exceeds projected annual supply) during those time periods with desalinated water in the supply portfolio versus without. Second, one has to calculate the loss of economic value associated with the occurrence of shortages in each time period. Third, one has to estimate the risk aversion premium that water users affected by shortage (e.g., water users subjected to rationing) would be willing to pay to reduce or avoid this risk. Dr. Hanemann conducted the first two elements of this analysis in a study for the California Energy Commission in 2006. That study assessed the economic loss for urban water users in Southern California under a climate change scenario. In 2016, Dr. Hanemann conducted all three elements of this analysis for the Central Valley, including the calculation of an estimate for the risk aversion premium of Central Valley agricultural water users (i.e., estimating what water users may be willing to pay to avoid the increased risk of economic loss due to a reduction in their water supply under a climate change scenario). As shown in a presentation by MWDOC staff, the "allocation formula" results in a smaller amount of imported water delivered to Orange County during a shortage if the region is less dependent on MWD deliveries after inclusion of the Poseidon water in the portfolio. While the MWD "allocation formula" is somewhat complicated and dependent on real-life variables, the MWDOC report summarizes the impact of the formula on "reliability" as: "The average person might expect OC to be more reliable by 56,000 AF per year with the Poseidon Project. This is not the case under either of these definitions." But the ISTAP Report failed to consider the actual value of paying for 56,000 ac/ft/yr of Poseidon water as risk mitigation, given that	

	inclusion of the water into the local portfolio will reduce imported water available to local agencies from MWD during periods of interruptions. In Dr. Hanemann's view, the "finding by the ISTAP Phase 2 Report that a subsurface intake at Huntington Beach would not be economically viable lacks foundation. The quantity offered as a measure of the economic value of the increased reliability provided by desalination – the time-varying premium that OCWD is willing to pay to Poseidon – is flawed and does not in any way measure the (likely increasing) economic value of supply reliability in Orange County." ISTAP did not consider whether the Project itself, with or without subsurface intakes, is economically feasible. Dr. Hanemann flagged that it remains unclear as to how the desalinated water from the Poseidon facility would actually be put to use because this has not yet been determined by OCWD. The water might be sold directly to water providers or used in some manner for groundwater recharge. Dr. Hanemann opines that "different options may have different implications both for the final cost of the water to users and for the ultimate change in supply reliability as a result of putting the Poseidon project on-line." Additionally, the extent to which the supply of desalinated water from the Huntington Beach facility would actually increase supply reliability in Orange County in a future drought, versus merely augmenting the County's normal baseline supply, remains unclear. If the supply of desalinated water were to end up merely augmenting the normal baseload supply, the cost of this project would likely not be justified because there are cheaper alternative sources of baseload supply from enhanced conservation efforts, the reuse of treated wastewater, or water market purchases. For example, the Irvine Ranch Water District (IRWD) has purchased farmland in Palo Verde Irrigation District (PVID) possibly with the purpose of transferring the water directly or indirectly into Orange County. As understood by Dr. Hanemann, "this water was acquired for a one-time, up-front cost of approximately $3,400/AF, which will turn out to be significantly cheaper than the ultimate cost of water from Poseidon." Given the potential to obtain additional water supplies for Orange County from water market purchases like those planned by IRWD or other agencies (including MWD), the potential for expanded the re-use of treated wastewater in Orange County (including 60 MGD from the "Carson project"), and that MWD is said to be considering building its own desalination facility that would serve the entire Southern California region, OCWD must determine the value added for Orange County by obtaining 56,000 AF every year from Poseidon at a cost of $2,200/AF, particularly if it is only intended as mitigation for intermittent shortages of imported water.	

	Dr. Hanemann summarized his findings by stating that the "ISTAP Phase 2 analysis fails to demonstrate that a subsurface intake is not economically viable compared to the screened open ocean intake proposed for the Poseidon facility. It also fails to demonstrate that the Poseidon facility with any type of intake is economically justified." Therefore, the Santa Ana Water Board cannot rely upon the ISTAP's economic feasibility analysis.	
I.D	I.D. The Santa Ana Water Board failed to identify the need for the Project, thus allowing a 50 MGD design capacity to rule out the use of subsurface intakes. The Santa Ana Water Board erroneously determined that the identified need for 56,000 AFY of desalinated water is consistent with the MWDOC 2015 Urban Water Management Plan (UWMP), the UWMPs of municipalities in the region, and other relevant water planning documents. With this inaccurate determination of "identified need", the Santa Ana Water Board went on to erroneously conclude "subsurface intakes are not feasible for a 50 MGD facility at the proposed site or at nearby sites." 1. Poseidon should not be allowed to arbitrarily propose a design capacity that exceeds the technical feasibility of the best technology to minimize marine life mortality – subsurface intakes. The OPA section III.M.2.b(2) requires the Regional Water Boards to: "Consider whether the identified need for desalinated water is consistent with an applicable adopted urban water management plan prepared in accordance with Water Code section 10631, or if no urban water management plan is available, other water planning documents such as a county general plan or integrated regional water management plan." The OPA section most relevant to "identified need", the "Technology" section III.M.2.d.(1), states: Subject to chapter M.2.a.(2), the regional water board in consultation with State Water Board staff shall require subsurface intakes* unless it determines that subsurface intakes are not feasible based upon a comparative analysis of the factors listed below for surface and subsurface intakes. A design capacity in excess of the need for desalinated water as identified in chapter III.M.2.b.(2) shall not be used by itself to declare subsurface intakes as not feasible.	In comment I.D., CCKA makes five assertions related to the need for the 56,000 AFY of desalinated water from the Facility. The Santa Ana Water Board analyzed the Discharger's and water district's proffered demonstration of the identified need for desalinated water and the consistency of that need with applicable urban water management plans (UWMP). This analysis included the consideration of the need in the context of both UWMPs and other planning documents, as set forth in Ocean Plan chapter III.M.2.b and in chapter III.M.2.d. In response to this comment and other comments received, Attachment G.2 of the Tentative Order has been revised to clarify that there are two parts involved in the Ocean Plan's identified need provisions: (1) the relevant water agencies must identify a need for the specific volume of desalinated water, and (2) the need must be consistent with an UWMP or other water planning documents if there is no available UWMP. The initial draft of Attachment G.2 relied on letters submitted MWDOC and OCWD as sufficiently identifying a need for 56,000 AFY of desalinated water and focused on analyzing whether that identified need was consistent with the applicable UWMPs. However, based on comments from the public and the members of the Board, it was clear that additional information was required to support the identification of a need for 56,000 AFY. The Santa Ana

	The administrative record for the OPA makes it clear that the intent of these provisions was to balance the Regional Water Boards' enforcement of Water Code section 13142.5(b) with the authority of local water agencies to ensure reliable water supplies. In the OPA adoption hearing State Water Board staff briefly explained: "We also added in this section and still meet regional needs for water as described in Chapter III.M.2.b.(2) to make it clear that the Regional Water Board can require subsurface intakes to the extent feasible. But it should defer to the local or regional water agencies identification of their water needs for the entire project." This discretionary deference to local and regional water agencies supply choices does not override the mandate for the Santa Ana Water Board to enforce the Water Code. More importantly, OPA section II.M.2.d.(1)(a) makes it clear that if the determination of subsurface intakes not being feasible is a function of how much seawater is withdrawn for source water, the applicant must show an "identified need" for the product water in an Urban Water Management Plan. And that showing of "need" must be compelling enough for the Santa Ana Water Board to find that overriding the mandate to minimize intake and mortality of marine life is justified. The requirement to show "need" for the volume of water proposed in the application for a permit is not limited to what can be produced in a desalination facility – nor what is merely listed in an UWMP. According to the OPA SED, the UWMP must be scrutinized to ensure it shows a "need." As stated therein: "Subsurface intakes should be used to the maximum extent feasible. The intent of the language is to ensure that if there is a situation where an Urban Water Management Plan identified a need for 10 MGD of desalinated water, but only 9 MGD could be acquired through subsurface intakes, the regional water board would not automatically reject subsurface intakes as an option. Instead, the regional water board could require the use of subsurface intakes for the 9 MGD and find an alternative means for acquiring the other 1 MGD. The alternative means that 1 MGD could include withdrawing water through a screened surface intake or seeking out other water supply options like recycled water. Chapter III.L.2.d.(1)(a)ii. allows the regional waterboards to determine that a combination of subsurface and surface intakes may be the best available intake technology feasible for a project. The language will help to ensure subsurface intakes are not automatically precluded as an option based on an Urban Water Management Plan alone." In response to comments from a desalination industry advocacy group, the State Water Board staff replied:	Water Board held a workshop on May 15, 2020 and received additional information from the water agencies regarding the need for 56,000 AFY of desalinated water. The water agencies also submitted written correspondence addressing need prior to the workshop. Attachment G.2 of the Tentative Order was updated to include the information provided by MWDOC and OCWD to support a need for 56,000 AFY. In response to the first assertion, the Santa Ana Water Board did consider whether it was feasible to include subsurface intakes for some portion of the intake capacity, in accordance with chapter III.M.2.d.(1)(a). (See responses to comments 0035.02 and CCKA I.B.) The commenter correctly notes that the intent of the provision was to make clear that the Regional Water Board can require subsurface intakes to the extent feasible. However, the feasibility analysis conducted by the Santa Ana Water did not show that subsurface intakes were technically feasible for more than a small portion of the intake (see Attachment G.1 of the Tentative Order, Section 1). While the Ocean Plan requires that the identified need for desalinated water be "consistent with" an UWMP, it does not prohibit other relevant considerations as part of evaluating a project proponent or water district's demonstration of identified need. As illustrated in revisions to Attachment G.2, the Ocean Plan does not include a specific method for evaluating whether identified need for desalinated water has been demonstrated. It requires that there be a showing of identified need, and an analysis of whether the need identified is consistent with an UWMP.

	"[The] proposed Desalination Amendment is still adequately flexible in that if subsurface intakes are not feasible, a screened surface water intake can be used for all or a portion of the intake. Or alternatively, a plant can be scaled down or redesigned so that subsurface intakes can be used. Also, regional needs can be met by other water resources like water recycling or groundwater storage when water is abundant." Contrary to the plain reading of the OPA, and the supporting evidence in the SED, the Draft Permit states: "The Ocean Plan expressly requires that the project proponent's proposed production of desalinated water be consistent with an applicable UWMP and other water planning documents, not identified as necessary within those plans." That is not what the OPA expressly says. First, the OPA does not expressly call for consistency with an UWMP "and" other planning documents. The exact language states: "…consistent with an applicable adopted urban water management plan prepared in accordance with Water Code section 10631, or if no urban water management plan is available, other water planning documents…" More importantly, the OPA does not expressly call for "the project proponent's proposed production" to be consistent with an UWMP. The OPA clearly says that the "identified need" must be consistent with an Urban Water Management Plan. This may seem semantic, but it's important. Substituting in the actual language from the Ocean Plan, the staff report seems to be arguing that the "identified need for the water" is not required to be "identified as necessary". The analysis cannot change the term used in the OPA regulations in a way that is illogical and undermines its intent. The analysis requires looking at the mandates in the Water Code section 13142.5(b) more closely. And it requires applying a strict interpretation of what it means to show the identified need must be "consistent" with the Urban Water Management Plan than is done in the Draft Permit. As written, the Draft Permit suggests that: "To be "consistent with" water planning documents does not require that water planning documents specifically identify a project and the specific volume of desalinated water as a source that is absolutely required to meet water demand." This argument, that is foundational to the staff findings, seems to rest on a court decision cited in the footnotes. That court decision in Muzzy Ranch Co v. Solano County Airport Land Use Commission (2008) is distinguishable from the staff's relaxed interpretation of what it means to be consistent in this case. It is	Guidance in the Ocean Plan administrative record on how to weigh and analyze the issue of identified need is minimal. Analysis of the specific language, and of how that language was included in the Ocean Plan sections on site and technology, indicates that the Santa Ana Water Board has discretion to consider a range of factors and planning documents in determining whether need for desalinated water has been met and to balance that analysis against the direction of Water Code section 13142.5(b) to minimize intake and mortality of all forms of marine life. (See also response to comment 0177.11.) So while the identified need for desalinated water must be consistent with an applicable UWMP if one is available, the Ocean Plan does not prohibit the Board from considering whether other water planning documents support a finding of need or whether an identified need is also consistent with other water planning documents. The Santa Ana Water Board would agree that if the identified need for desalinated water was not consistent with an applicable UWMP, the Board could not overcome that by turning to other water planning documents in lieu of an applicable UWMP. The Board considered other planning water documents in addition to the applicable UWMP, but the Board did not substitute the applicable UWMP with other water planning documents for its determination of consistency. The commenter takes issue with Santa Ana Water Board's interpretation of what it means for identified need to be "consistent with" an UWMP, arguing for a stricter - interpretation of "consistent with" based upon the argument that Water Code section 13142.5(b) "strictly requires use of the best available technology feasible." However, the language used in the Ocean Plan cannot be read to require a meaning beyond that contained in the

	important to remember that, in this circumstance, the Regional Board is interpreting the UWMP to enforce the Water Code section 13142.5(b), not to enforce the Urban Water Management Act. The Muzzy Ranch case stands for the argument that interpreting "consistent with" is determined by the legislative intent of the law being enforced. In Muzzy Ranch, the legislative intent was broad and consequently supported a relaxed interpretation of "consistency." Here, the law being enforced is the Water Code section 13142.5(b). In stark contrast to Muzzy Ranch, the Water Code section 13142.5(b), that applies here, is much stricter. The Water Code requires that the Regional Board "shall" compel the use of best available technology feasible. Muzzy Ranch would be applicable here if the government were enforcing the Urban Water Management Act and found that the general intent of the law and guidance was fairly relaxed, and so the "identified need" in the UWMP was acceptably vague. But the Regional Board is not enforcing the Urban Water Management Act, the Regional Board is enforcing the Water Code section 13142.5(b) which strictly requires use of the best available technology feasible. As we pointed out at the June 14, 2019 informational hearing on "Identified Need", the staff's interpretation turns the law on its head. It is arguably a legitimate concern that the Regional Board not dictate water reliability decisions to the local water agencies. But, in turn, the Regional Board cannot allow water agencies to dictate a design capacity that undermines enforcement of the mandate to minimize marine life mortality -- not without compelling evidence that the volume of water is necessary for future reliability. That is not imposing on the water agency's authority – that is the Regional Board's duty to enforce Water Code section 13142.5(b). There is no compelling evidence of "need" identified in the Urban Water Management Plan, as called for in the OPA, suitable for overriding the requirement to use subsurface intakes when feasible. And the MWDOC 2015 UWMP shows there are several ways to ensure future reliability. And the update of the 2015 MWDOC UWMP, the 2018 Reliability Study, shows that those alternatives are both more reliable and less costly. Those findings are not the result of the Regional Board imposing a decision on MWDOC, those findings resulted from studies and conclusions completely independent of Regional Board influence. At the OPA final adoption hearing, there was a great deal of discussion about ensuring that subsurface intakes would be used whenever feasible. The concern then was exactly the same concern here: that project applicants should not be allowed to arbitrarily propose design capacities that exceed the technical feasibility of the best available technology to minimize marine life mortality – that best available technology being subsurface intakes. Similar to Poseidon's assertions, the Draft Permit seems to rely on findings in the SED that would preclude the Regional Water Board from imposing a "loading order" or other preferred alternatives. But that is not what is	actual words used. Attachment G.2 of the Tentative Order was revised to include a discussion of the plain meaning of the identified need provision and to clarify the distinction between "identified need" and "consistent with" as used in the Ocean Plan. (See Attachment G.2 to the Tentative Order (revised June 30, 2020) pp. 2–7.) The identified need must be consistent with an applicable UWMP, but it is not the UWMP that identifies the need. As noted in Attachment G.2, such an interpretation would render "consistent with" meaningless. (See Attachment G.2 to the Tentative Order (revised June 30, 2020) p. 7.) The plain meaning of "consistent" in this context is "compatible or in agreement with something" or "marked by agreement: compatible—usually used with with." The use of "consistent" in the Ocean Plan has not been construed by the courts. However, the plain meaning of the term comports with the limited case law interpreting "consistent" in other contexts. While the commenter tries to distinguish case law cited in Attachment G.2 interpreting this term based upon underlying legislative intent, requirements contained within Water Code section 13142.5(b) are not "enforce[d]" through a strict reading of consistency with a separate statute such as the Urban Water Management Act, which contains its own goals and directives. Instead, the Santa Ana Water Board is specifically directed in the Ocean Plan to "consider whether the identified need for desalinated water is consistent with an applicable [UWMP]. . . ." As stated above, the language used in the Ocean Plan ("consistent with," rather than "identified as needed in" an UWMP) must inform the interpretation. Had the State Water Board wished to require that an UWMP specifically list a desalination project in order to meeting the identified need provision, or to

	required here because MWDOC has independently identified preferred alternatives without any direction from the Santa Ana Water Board. It is further important to note that the MWDOC alternatives discussed in the 2018 Reliability Study, which updates MWDOC's 2015 UWMP include precisely what was described in the OPA SED at H-294 cited above, specifically "…water resources like water recycling or groundwater storage when water is abundant." Given there is no compelling "need" for the product water, the applicant is limited to what can be produced by withdrawing the source water through subsurface intakes. The language in the OPA cannot be interpreted in a way that would undermine the mandate of the Water Code. 2. The MWDOC Urban Water Management Plan is the document that must provide the "identified need". The OPA is clear that, if there is an applicable local or regional UWMP, that is the document that must identify "need." In this case, that is the MWDOC 2015 UWMP, incorporates the local retail agencies' UWMPs, as well as the OCWD Groundwater Management Plan. The MWDOC regional UWMP did not state a certain "need" for 56,000 AFY. And, as discussed below, the local retail agencies' UWMP did not identify "need" adding up to 56,000 AFY. In the table below are the UWMPs that discuss the potential need for Poseidon. Poseidon's proposed 56,000 AFY Huntington Beach project is not included in any of the applicable UWMPs. 3. Retail agencies' UWMPs in the service area include a "specific volume". In the analysis of "identified need" in Attachment G2, in an effort to justify the relaxed interpretation of being "consistent with an UWMP", the tentative permit states, "It would not be practicable for a water supplier to include a specific volume from an as of yet unpermitted project in its water sources."188 Nonetheless, two of the local water districts did include a "specific volume for an as-of-yet unpermitted facility." Of the UWMPs for the 28 local water districts in or near Poseidon's proposed service area, all but two state that they have sufficient supplies for normal, dry, and multiple dry years through 2040 without relying on seawater desalination. Laguna Beach County Water District states that, starting in 2020, it expects to need 1,000 acre-feet from either the proposed Poseidon or Dana Point facilities, whichever is more cost-effective.	require consistency with Water Code section 10631, subdivision (h), as proposed by the California Coastal Commission, it could have done so. However, this is not what the Ocean Plan directs. In any event, use of an UWMP to strictly determine whether a particular water source is needed, especially by a regional water board without authority or expertise in water supply management, is further limited by the complex range of factors involved in water planning in southern California. These factors and relationships between various water supply planning agencies were illustrated in presentations to the Santa Ana Water Board by MWDOC and OCWD in an information workshop held on May 15, 2020. Because of the relationship between the various regional and local water agencies, those agencies with access to imported water supplied by Metropolitan Water District will typically use that source to cover any gaps in water demands to ensure that they are adequately serving their constituents. As a result, lack of specific shortfalls listed in an UWMP does not necessarily demonstrate that the water is not needed and should not be used alone to rule out any project that does not appear within it as a definitively planned source for agencies. The commenter cites the 2018 Reliability Study to argue that there are other water supply alternatives that are more reliable and less costly. The commenter insists that because the findings in the study itself show that there is no need for the desalinated water, the Santa Ana Water Board would not be "imposing a decision on MWDOC." As shown in revisions to Attachment G.2, however, MWDOC—the agency that prepared that study—has expressed limitations as to use of the 2018 Reliability Study. Further,

	The Moulton Niguel Water District anticipates the need for 14,000 acre-feet from either the proposed Poseidon or proposed Dana Point desalination facilities. It is important to note that: • The proposed Dana Point, or "Doheny" facility, could produce 15,000 AFY if constructed to maximum capacity, meeting the "specific volumes" listed by Laguna Beach County Water District and Molton Niguel Water District; • The proposed Dana Point facility is sited and designed to use subsurface intakes, and can feasibly produce 15,000 AFY at full capacity; and • The proposed Dana Point facility was listed in the alternatives ranked in the MWDOC 2018 Reliability Study, and the full capacity alternative ranked extremely well compared to the Poseidon project. At most, the retail agencies' UWMPs include a "specific volume" of need for 15,000 AFY of desalinated seawater, and all of that need can be met by development of the Doheny project using subsurface intakes. 4. The Fryer expert report demonstrates that applicable Urban Water Management Plans and OCWD's Long Term Facility Plan do not prove a demand for the proposed facility. In 2015, as the local agencies and MWDOC finished their UWMPs, Orange County Coastkeeper contracted James Fryer, an expert environmental scientist, to assess the demand forecasts used by the Orange County Water District as the rationale for new water supply projects. That report found that the methodology used in preparing the UWMPs was extremely risk averse and likely overstated future demand projections. The Fryer report shows that the water planning documents relied upon by Poseidon are not adequate evidence of future demand for 50 MGD in the region, as required in the OPA. Mr. Fryer's expert report concluded that the "Orange County Water District (OCWD) uses outdated water demand forecasts for the year 2035 that are 91,846 acre-feet per year, or 17.5%, higher than the more recent water demand forecasts for its service area retailers." Furthermore, the "previous Urban Water Management Plans consistently overestimated future demand. Starting in the year 2000, for each cycle of the 5-year UWMPs, based on declining actual demand trends the retailers repeatedly reduced demand forecasts for subsequent years compared to previous forecasts." Finally, the report finds that the "Orange County Reliability Study used by the retailers' water for their new water demand forecasts, uses multiple instances of conservative assumptions that, as with past UWMPs, can be expected to overestimate future demand" and that some	the study itself states that it is not intended "to dictate which projects the local water agencies should implement." (2018 Reliability Study, p. 1-5.) Thus, it overstates that agency's intent to characterize the Reliability Study as having "independently identified preferred alternatives." Additionally, contrary to the commenter's assertion, the 2018 Reliability Study is not an update to MWDOC's 2015 UWMP; it is an update to MWDOC's 2016 Reliability Study. (See 2018 Reliability Study, p. 1-1.) The Ocean Plan does not require that an applicable local or regional UWMP identify the need for desalinated water. Instead, the Ocean Plan requires that a regional water board "must [c]onsider whether the identified need for desalinated water **is consistent with** an applicable [UWMP]." (emph. added) (See response above.) As discussed in Attachment G.2, consistency with an UWMP does not require that the UWMP identify a specific shortfall in supply that will be met by desalinated water. (Attachment G.2, pp. 4–5.) The statement in Attachment G.2 of the Tentative Order has been revised to reflect a more measured interpretation of how local water districts may approach water planning with regard to an unpermitted project. This may reflect specific concerns within local water supply areas. Moreover, it is important to balance an assessment of different UWMP forecasts against the types of agencies engaged in supply planning, and how they relate to regional versus local supplies. For instance, OCWD takes the position that regional planning agencies are better suited to pursue new projects than local agencies. It is important to note that OCWD has a distinctly different planning role than the local water purveyors.

	"fundamental assumptions in the water demand model are inconsistent with historic and recent water use patterns." Additionally, the Fryer expert report found that the water planning documents used by Poseidon do not account for new sources of water already under construction. The report finds that the "Long-Term Facilities Plan 2014 Update does not account for an additional 65,000 acre-feet per year of high quality treated wastewater that is expected to become available within the next 5 to 10 years." The "new source of treated wastewater would be equal or better than the quality of water that is currently used to replenish groundwater basins and would not be subject to shortages during drought." Therefore, the water planning documents relied upon by Poseidon omits 65,000 acre-feet per year that is expected to become available for groundwater recharge into the Orange County Water District basin. Further, water users have repeatedly demonstrated the willingness and ability to substantially curtail water use during serious, multi-year drought events rather than pay for new water supplies. The expert report concludes that "[m]any of the early year UWMPs acknowledged that water users would curtail use during serious drought years. But by the 2005 UWMPs, water use was generally assumed to increase 6% to 9% during single and multiple drought years." Since water shortages during drought drives the need for new supplies, underestimating the ability and willingness of water users to curtail demand during serious drought years can lead to unnecessary and expensive new supply projects and financial difficulty for water suppliers. The Orange County water retailers' 2015 UWMP demand forecasts, as with the earlier plans, do not account for ongoing conservation innovation. Mr. Fryer concludes that ongoing "conservation innovation, unforeseen at the time of past demand forecasts, is now a well-established pattern that has contributed to actual demand remaining well below forecasted levels." Ongoing innovations in conservation devices and practices can be expected to continue reducing urban per-capita water demand during the demand forecast period. The retailers' 2015 UWMPs indicate that most of the service areas are at or near build-out. The expert report concludes that since "there is relatively little undeveloped space in the OCWD service area, most future development will be in-fill development. This can be expected to lower average per-capita water use and will be an important dynamic that should be addressed in water demand projections." Water providers with service areas at or near buildout substantially overestimate future demand risk, perpetuate inefficient use of limited financial resources on unnecessary capital projects, and encounter revenue stability problems and ratepayer backlash. Mr. Fryer concludes that historically "water demand	The Santa Ana Water Board does not propose to question how these agencies approach their water planning, but instead seeks to understand the goals and methods set forth in UWMPs and other reports that are used to provide a framework for water supply planning and whether a need to develop a large new water supply such as the proposed project has been demonstrated. Further, the proposed Doheny Desalination Plant is not intended for north or central Orange County, but only for a very limited area in southern Orange County. The Santa Ana Water Board needs to respond to the permit application for a seawater desalination facility in Huntington Beach. (See also response to comment 0004.19.) In the fourth assertion, the commenter relies on an analysis performed by James Fryer (Fryer Report) to critique the methods and analysis used in UWMPs to forecast water demand, among other things. The Fryer Report describes a number of bases upon which the commenter disagrees with how water agencies assess the need to develop additional water supplies, including failure to adequately account for conservation efforts and new innovation for curtailing future demand. The commenter previously submitted the Fryer Report and it was considered in the analysis of need in Attachment G.2. As stated in Attachment G.2. the Board does not have the expertise or authority to evaluate the underlying assumptions in the water agencies' planning documents. (Attachment G.2 to the Tentative Order, pp. 16–17.) In this comment, the commenter continues to urge the Santa Ana Water Board to go substantially beyond considering whether the Discharger has shown that the

	forecasts used multiple conservative assumptions to reduce the risk of uncertainties, particularly for rapid growing service areas. However, the situation is different for service areas not experiencing rapid growth, and at or near buildout. Overestimating future demand for service areas at or near build-out creates long- term risks that should be carefully considered." The UWMPs and other water planning documents Poseidon relied upon to demonstrate supply need is inadequate to serve as an exemption to the mandate to use subsurface intakes. The Santa Ana Water Board has not properly evaluated the demonstrated need for the desalinated water in order to forgive the use of screened surface intakes in lieu of the best available technology of subsurface intakes. The Santa Ana Water Board must evaluate whether the demonstrated need exists for Poseidon's self-proposed intake capacity. As required by the OPA, if the intake capacity is larger than the adequately demonstrated need for the project, the Santa Ana Water Board must re-assess whether subsurface intakes are feasible at lower intake capacities. The Water Code mandates use of the best available technology feasible to minimize intake and mortality of marine life. The Draft Permit makes exceptions to that mandate that are not, and cannot be, supported. Further, the UWMPs for both the MWDOC and the retail supply agencies only identify, at most, the need for 15,000 ac/ft/yr – far short of the Draft Permit's unsupported assumption of a "need" for 56,000 ac/ft/yr. And much, if not all, of that documented "need" for 15,000 ac/ft/yr of desalinated seawater can be met with the development of the Doheny Project, which plans to use the preferred subsurface intakes. Finally, as described elsewhere in these comments, the analyses of "feasibility" rely on statements and documents presented by 2969Poseidon and their partner agency OCWD without proper verification and are otherwise wholly inadequate to support approval of the project as proposed. 5. The Regional Board must ensure the final determination of "need" does not interfere with Coastal Commission authority. If or when the Poseidon project is considered by the Coastal Commission, it is reasonably foreseeable that enforcement of the Coastal Act will also include a determination of "need." But the Coastal Act has different considerations for marine life and water quality protections than the Water Code. The Coastal Act Section 30412(b) also provides:	water agencies have identified need for the desalinated water and whether the identified need is consistent with an UWMP by asking the Board to evaluate a water supply agency's planning efforts and assumptions. While the Santa Ana Water Board has discretion to consider a range of factors in assessing whether a project proponent or water supply agency has identified a need for desalinated water, including whether that need has been artificially inflated, it is beyond the Board's expertise and authority to critique water supply planning forecasting. The Santa Ana Water Board cannot use the Fryer Report to substitute its own judgment and question the demand assumptions of the water agencies. The commenter also asserts that the Tentative Order makes exceptions to the mandate that the Facility use the best available technology feasible to minimize intake and mortality of marine life. This is not correct. As discussed in Findings 18 to 28 of Attachment G, the Tentative Order requires the Discharger to use the best available technology feasible to minimize the intake and mortality of all forms of marine life in accordance with Water Code 13142.5(b) and the Ocean Plan. Findings 18 to 20 and Attachment G.1 specifically address the infeasibility of subsurface intakes. The Santa Ana Water Board's findings regarding the need for desalinated water do not bind or otherwise limit the Coastal Commission from considering need for purposes of the Coastal Act or other statutory or regulatory authority. The Santa Ana Water Board recognizes that each agency considering whether to issue a permit for the Facility must fulfill their respective statutory and regulatory responsibilities, and independently apply their respective statutes, regulations, and policies. The findings and

	The commission shall not, except as provided in subdivision (c), modify, adopt conditions, or take any action in conflict with any determination by the State Water Resources Control Board or any California regional water quality control board in matters relating to water quality or the administration of water rights. The tentative permit must clearly state: "Nothing in this permit will be considered "in conflict" with the Coastal Commission's independent determination of need for the volume of product water, volume of source water, nor the best intake or discharge technology to ensure compliance with the Coastal Act."	requirements in the Tentative Order related to Water Code section 13142.5(b) and the implementing provisions in the Ocean Plan are those of the Santa Ana Water Board, not of the Coastal Commission. If the Coastal Commission makes findings or imposes requirements pursuant to the Coastal Act or other authority that differ from those of the Santa Ana Water Board, such findings and requirements would not conflict with the Santa Ana Water Board's findings and requirements, provided that they are not less protective of water quality.
I.E	I.E. The Santa Ana Water Board has failed to determine whether subsurface intakes are feasible for a reasonable range of alternative intake design capacities. The Santa Ana Water Board erroneously concluded that subsurface intakes were infeasible for a 50 MGD facility without determining whether subsurface intakes are feasible for a reasonable range of alternative intake design capacities. The OPA states that: "If the regional water board determines that subsurface intakes are not feasible for the proposed intake design capacity, it shall determine whether subsurface intakes are feasible for a reasonable range of alternative intake design capacities." The Santa Ana Water Board only analyzed alternative intake design capacities for Poseidon's predetermined site – and as discussed above that minimal analysis is flawed until freshwater drawdown is removed as a feasibility criterion or at a minimum until physical test wells are performed. In reviewing alternative design capacities, the Santa Ana Water Board asked Poseidon to: "analyze the maximum intake that could be achieved while allowing for no more than 1,000 AFY to be withdrawn from inland aquifers. (See Letter from OCWD dated May 18, 2018.)" First, the Santa Ana Water Board only asked Poseidon to consider alternative design capacities for one site – Poseidon's predetermined site. And this was only requested after we raised concerns regarding Poseidon's modeling and reliance on the ISTAP Study that did not consider alternative design capacities. The ISTAP never considered the best available intake capacity that would make subsurface intakes feasible. The ISTAP considered "subsurface intake technologies that would be capable of producing 100 to 127 million gallons per day (MGD), the hydraulic capacity needed to meet a production goal of 50 MGD using the SWRO desalination	The Santa Ana Water Board considered whether slant wells were feasible for a reasonable range of alternative intake design capacities at the best available site and determined that the maximum intake feasible from slant wells is 3.8 MGD. As noted by the commenter, the Ocean Plan requires a regional water board to analyze the feasibility of a reasonable range of alternative intake design capacities if the regional water board determines that subsurface intakes are not feasible for the proposed intake capacity. This analysis is required to provide the Board with information needed to make its decision regarding whether a combination of subsurface and surface intakes is the best technology feasible. (See Desalination Amendment Staff Report, pp. J-152 to J-153 ["This [provision] was added to help inform the decision where the regional water board may find that a combination of subsurface and surface intakes is the best feasible alternative to minimize intake and mortality of marine life, and it will help provide them with the information they need to make that decision."].) The Santa Ana Water Board did evaluate whether a combined surface and subsurface intake system was the best available feasible technology at the proposed site and

	technology. The maximum capacity of 127 MGD was determined by Poseidon to meet water quality discharge standards, using 27 MGD to dilute the concentrate from the SWRO desalination process." The Santa Ana Water Board never considered alternative design capacities at other sites. The Santa Ana Water Board's erroneous findings state the "Santa Ana Water Board finds that subsurface intakes are not feasible for a 50 MGD facility at the proposed site or at nearby sites." As discussed below, the Santa Ana Water Board's site analysis was done improperly, but more importantly here, the Santa Ana Water Board never analyzed the best available design capacity for alternative sites. Each site was analyzed using Poseidon's predetermined design capacity of 50 MGDs. Second, the Santa Ana Water Board will never know whether an alternative design capacity is the best available to minimize marine life mortality because the only alternative design analysis included the illegal use of freshwater drawdown to obstruct the analysis. The Santa Ana Water Board's refusal to require the common practice of drilling test wells also hinders any true understanding of whether alternative design capacities would allow subsurface intakes to be feasible at Poseidon's predetermined site. Lastly, the use of freshwater drawdown as a technical feasibility barrier rather than an economic consideration – as Dr. Hanemann recommended – prevents the Santa Ana Water Board from truly knowing whether subsurface intakes are feasible for an alternative design capacity. Finally, the Santa Ana Water Board cannot determine subsurface intakes are not the best available technology solely because of the project's design capacity without an adequate showing of need. Poseidon's self-determined design capacity cannot be used as the reasoning to consider subsurface intakes infeasible. The OPA states that a "design capacity in excess of the need for desalinated water as identified in chapter III.M.2.b.(2) shall not be used by itself to declare subsurface intakes as not feasible." As discussed above, the Santa Ana Water Board has not properly assessed whether the design capacity is in excess of the need, and therefore, cannot conclude that subsurface intakes are infeasible without first analyzing the feasibility at smaller design capacities. Neither Poseidon nor its project partner, OCWD, have provided evidence of a definitive need for a 50 MGD production facility. Therefore, the Santa Ana Water Board cannot rely upon the ISTAP 1 conclusions that slant wells are technically infeasible for Poseidon's proposed site, and the elimination of slant wells from consideration in ISTAP 2 undermines the value of the economic feasibility study. Further, ISTAP 2 relied on the Geosyntec report's findings that a smaller design capacity, and consequently a lower volume intake, would result in a greater percentage of freshwater withdrawn from slant wells. However, as noted above, the HydroFocus review of the Geosyntec 2015 report found that lowering	found it to be infeasible. (See Attachment G.1 of the Tentative Order, Section 2.) The range of feasible design capacities for slant wells is 0 to 3.8 MGD. Given this limitation, a combination of slant wells and surface intakes is not technically feasible. As discussed above, the Santa Ana Water Board determined that seafloor infiltration galleries are technically feasible but economically infeasible. A combined system using seafloor infiltration galleries and a surface intake would also be economically infeasible. Thus, a combination of subsurface intakes, whether slant wells or seafloor infiltration galleries, and surface intakes is not the best available technology feasible. The Ocean Plan does not require the Santa Ana Water Board to assess whether a combination system is feasible for alternative sites. Pursuant to chapter III.M.2.b.(1) of the Ocean Plan, the Board must consider whether subsurface intakes are feasible at each potential site. The site factors do not include consideration of alternative design capacities or feasibility of a combination intake system. Nor do the site feasibility factors refer to chapter III.M.2.d.(1)(a)ii., the provision in the technology assessment that requires the Board to consider alternative design capacities and the feasibility of a combination intake system. Moreover, the feasibility of subsurface intakes was not the sole reason for the elimination of additional sites. As discussed in Attachment G.1 of the Tentative Order, Section 1, the Santa Ana Water Board evaluated other feasibility factors to narrow the sites. These factors and their results are shown in the following table.

the volume of the intake may reduce the percentage of freshwater drawdown and be both technically feasible and more economically beneficial.

The Santa Ana Water Board has failed to determine whether subsurface intakes are feasible for a reasonable range of alternative intake design capacities. The Santa Ana Water Board inappropriately only asked Poseidon to consider alternative design capacities for one site – Poseidon's predetermined site. The Regional Board only considered a 50 MGD project at alternative sites and never considered alternative design capacities at other sites. The Santa Ana Water Board will never know whether an alternative design capacity is the best available to minimize marine life mortality because the only alternative design analysis included the illegal use of freshwater drawdown to obstruct the analysis. The Santa Ana Water Board cannot determine subsurface intakes are not the best available technology solely because of the project's design capacity without an adequate showing of need. The Santa Ana Water Board must determine whether subsurface intakes are feasible for a reasonable range of alternative intake design capacities at Poseidon's predetermined site by removing freshwater drawdown from the analysis and analyze alternative intake design capacities at alternative sites.

	CRITERIA	ONSHORE SITES EVALUATED				
		1D	1E	1G	1H	2A
1	SUBSURFACE INTAKE					
2	NEED FOR WATER					
3	SENSITIVE HABITATS AND MARINE PROTECTED AREAS					
4	EXISTING INTAKE AND DISCHARGE PIPELINES					
5	WASTEWATER DISCHARGE FOR BRINE DILUTION					
6	SITE CONDITIONS					
7	MARINE LIFE IMPACTS DUE TO CONSTRUCTION & OPERATION					

See response to comment 0014.04 and 0055.01, and Attachment G.2 of the Tentative Order that support the need for the 50 MGD Facility.

		Regarding the need for test wells related to the slant well evaluation, see response to comment I.B. above.
I.F	I.F The Santa Ana Water Board failed to independently analyze the Best Available Design to minimize marine life mortality. The Santa Ana Water Board erroneously concluded that subsurface intakes were infeasible for a 50 MGD facility without independently determining the best available design capacity to minimize marine life mortality. The OPA requires: "The regional water board shall first analyze separately as independent considerations a range of feasible* alternatives for the best available site, the best available design, the best available technology, and the best available mitigation measures to minimize intake and mortality of all forms of marine life. Then, the regional water board shall consider all four factors collectively and determine the best combination of feasible* alternatives to minimize intake and mortality of all forms of marine life." The Santa Ana Water Board falsely claims that they "first individually evaluated alternatives for the proposed Facility for the best available site, the best available design, the best available technology, and the best available mitigation measures to minimize intake and mortality of all forms of marine life." The Santa Ana Water Board never independently assessed whether 50 MGDs is the best available design capacity to minimize marine life mortality. The OPA is explicit that "[d]esign is the size, layout, form, and function of a facility, including the intake capacity and the configuration and type of infrastructure, including intake and outfall structures." The Santa Ana Water Board's Findings are completely void of any analysis to independently determine the best available design capacity to minimize marine life mortality. The only minimal analysis found is the insufficient analysis found in the best available technology section, which as we discuss above, is illegal. The Santa Ana Water Board only concludes that it found "that subsurface intakes are not feasible for a 50 MGD facility at the proposed site or at nearby sites." The Santa Ana Water Board acknowledges – outside its Findings – that a smaller design capacity would result in less marine life mortality. On January 8, 2020, the Santa Ana Water Board sent a letter to Poseidon requesting additional information based on the Regional Board Members' concerns at the December 5th 2020 Board Workshop. The letter states:	As noted by the commenter, the Ocean Plan requires the Santa Ana Water Board "to first analyze separately as independent considerations a range of feasible alternatives for the best available site, the best available design, the best available technology, and the best available mitigation measures to minimize intake and mortality of all forms of marine life." (Ocean Plan, ch. III.M.2.a.(2).) As required by the Ocean Plan, the Board independently considered these factors. However, the Board's independent consideration of the best available feasible alternatives cannot be wholly devoid of the specifics of the proposed project or the other components. (See Desalination Amendment Staff Report, response to comment 24.2, p. H-411 ["As part of the individual assessments, the analysis for the preferred technology will require the feasibility of a subsurface intake. . . . the process of analyzing the feasibility of a subsurface intake will overlap with the process of investigating the preferred siting alternative."].) This is especially true of mitigation, which necessarily hinges on the site, design, and technology used by the specific project. (See Desalination Amendment Staff Report, response to comment 21.89, p. H-369 [Mitigation will be required for all marine life mortality that occurs after the best available site, design, and technology are implemented."].) Moreover, the Board may consider the objectives of the proposed project to determine the feasibility of an alternative. (See *Surfrider Foundation v. California Regional Water Quality Control Board, San Diego Region* (2012) 211 Cal.App.4th 557, 582–583.)

	"Poseidon Water has proposed to produce 50 million gallons per day (MGD) of desalinated water. To produce this amount of water, Poseidon Water will need to withdraw 107 MGD of seawater. If the proposed project withdrew a volume less than the proposed 107 MGD of seawater and produced less desalinated water, there would be a reduction in the intake and mortality of marine life." The Santa Ana Water Board is explicit that if Poseidon withdrew less seawater than their predetermined 107 MGD of seawater, it would result in less marine life mortality. The OPA is explicit that the Best Available Design should include an analysis of the intake capacity in order to minimize marine life mortality. The Santa Ana Water Board simply ignored that charge and never independently analyzed the best available design capacity when they knew a smaller design capacity would minimize marine life mortality. The Santa Ana Water Board has not determined the best available design for the proposed Poseidon-Huntington Beach facility to minimize marine life mortality. The Santa Ana Water Board erroneously concluded that subsurface intakes were infeasible for a 50 MGD facility without independently determining the best available design capacity to minimize marine life mortality despite acknowledging that a smaller design capacity would result in less marine life mortality. The Santa Ana Water Board needs to independently review a smaller design capacity, and then determine whether a subsurface intake would be feasible at alternative sites to ensure this facility complies with the requirements of the OPA.	The Board's analysis of alternative design capacities is tied to the need for the desalinated water. As discussed in the response to comment I.D above, the Discharger has demonstrated an identified need for 50 MGD of desalinated water. To be feasible, alternative design capacities must accommodate the identified need of 50 MGD. As discussed in the responses to comments I.B and I.C above, neither slant wells nor seafloor infiltration galleries are feasible. Slant wells are technically feasible for an intake of up to 3.8 MGD. This limited intake capacity makes slant wells—whether alone or in combination with surface intakes—infeasible. Seafloor infiltration galleries, on the other hand, are technically feasible for 50 MGD. However, this intake system is economically infeasible. The Santa Ana Water Board has acknowledged that a smaller design capacity of surface intakes would result in less mortality and intake of marine life. However, a smaller design capacity of the surface intake is not a feasible alternative because it will not meet the need for 50 MGD. If the independent assessment of design required regional water boards to consider alternative design capacities to minimize intake and mortality without regard to the amount of water needed or the project objectives, the best available design capacity would always be zero. Such an exercise would not provide the regional water boards with meaningful information and cannot be what the Ocean Plan intended. The plain language of Water Code section 13142.5(b) requires the best available combination of site, design, technology, and mitigation feasible to minimize intake and mortality of all forms of marine life. (See *Surfrider Foundation*, 211 Cal.App.4th at 576.) The Board's

		independent consideration of the four factors is required to ultimately inform the Board's determination of the best available site, design, technology, and mitigation feasible as a collective set. (Desalination Amendment Staff Report, Response to Comment 6.1, p. H-11.) The Santa Ana Water Board considered the factors separately to the extent possible and used that information to determine the best available combination of site, design, technology, and mitigation feasible. (See Attachment G to the Tentative Order.) See response to comment 0011 and 0014.04, and Attachment G.2 of the Tentative Order that support the need for the 50 MGD Facility. Regarding the need for test wells related to the slant well evaluation, see response to comment I.B. above
II	**II. The Santa Ana Water Board failed to require the best available site to minimize marine life mortality.** The Santa Ana Water Board failed to adequately evaluate a reasonable range of alternative sites that would likely support subsurface intakes. After erroneously dismissing alternative sites that may support subsurface intakes, the Santa Ana Water Board failed to require Poseidon to site their open-ocean intake at a location that was the best available for reducing marine life mortality. The OPA states that the "regional water board shall require that the owner or operator evaluate a reasonable range of nearby sites, including sites that would likely support subsurface intakes." The Santa Ana Water Board failed to require the best available site to minimize marine life mortality. The Santa Ana Water Board states that it: "Evaluated a reasonable range of alternative sites, including sites that would likely support subsurface intakes, to determine the best available onshore and offshore sites feasible to minimize intake and mortality of all forms of marine life. For the onshore site, the Santa Ana Water Board evaluated nine segments of the southern California coast (Segments 1 to 9) and individual sites within those segments. The Discharger's proposed onshore site is Site 1G within Segment 1. For the offshore site, the Santa Ana Water Board	The Santa Ana Water Board acknowledges that this paragraph introduces three separate comments and are responded to separately for comments II.A to II.C.

	evaluated seven locations: Stations U2, U4, E, D2, S4, O2, and O4; the Discharger's proposed offshore site is Station E." As a common pattern throughout the Draft Permit, the Santa Ana Water Board determined that out of all the sites analyzed, Poseidon's predetermined site was the best available site for minimizing marine life mortality. Ironic that Poseidon's site – 20 years old and economically ideally sited next to the power plant – is the best site for minimizing marine life mortality. Since Poseidon first proposed this site 20 years ago, California has created a system of Marine Protected Areas, prohibited the intake of seawater as once- through cooling for coastal power plants, and adopted the OPA that requires a site based on minimizing marine life mortality. And yet the Santa Ana Water Board continues to stretch our imagination to conclude that no other site can provide subsurface intakes and that Poseidon's site still remains the best available for minimizing marine life mortality.	
II.A	A. The Santa Ana Water Board has failed to include sufficient evidence in the record to bridge the analytical gap to conclude Segments 4 – 9 are not the best available site to minimize marine life mortality. The Santa Ana Water Board failed to adequately assess whether alternative sites exist to make subsurface intakes feasible in Phase I of the sites analysis. The OPA states that for "each potential site, in order to determine whether a proposed facility site is the best available site feasible to minimize intake and mortality of all forms of marine life, the regional water board shall require the owner or operator to: Consider whether subsurface intakes are feasible." Erroneously, the Santa Ana Water Board concluded that it found "that subsurface intakes are not feasible for a 50 MGD facility at the proposed site or at nearby sites." As discussed, the Santa Ana Water Board's Finding is erroneous because it assumes a 50 MGD design capacity without first independently assessing whether a smaller design capacity is the best available for minimizing marine life mortality. But regardless of this error, the Santa Ana Water Board also fails to properly consider alternative sites for a 50 MGD facility because it relied upon Poseidon's assertions and socio/economic factors to throw out viable sites. Furthermore, not one alternative site was analyzed using the common practice of drilling test wells – let alone even modeling. The Santa Ana Water Board states that the "Discharger evaluated the nine segments and conducted a hydrogeological analysis to determine if subsurface intakes are technically feasible in each of the nine segments. The hydrogeological analysis included assessment of potential impacts to inland freshwater aquifers and sensitive wetland areas." In Phase I, the Santa Ana Water Board states:	In comment II.A., CCKA raises four assertions related to the narrowing of the sites for the Facility. Santa Ana Water Board staff used their best professional judgment to evaluate the information provided by the Discharger to assess the feasibility of alternative sites. All factors required by the Ocean Plan were considered in assessing each segment, not just whether subsurface intakes were feasible. While modeling and physical testing could be used to compare alternative sites, the Ocean Plan does not require the Discharger to use physical testing or modeling to evaluate alternative sites. (See Attachment G.1, Section 1 for the detailed analysis of site feasibility.) Attachment G.1 of the Tentative Order starting on page G.1-7, explains the site analysis process for the Facility. First, the larger segments along the coastline of Orange County were compared and based on this comparison, Segment 1 and the northern end of the Segment 2 were determined to be the better locations for the proposed Facility based factors listed in Chapter III.M.b.(1) to (7) .

	"Santa Ana Water Board staff found that Segments 3 through 9 have significant limiting factors for locating a subsurface intake, surface intake, or a combination thereof and determined that no further analysis is required based on the rationale outlined below." From our review of the record, Poseidon's hydrogeological analysis was nothing more than reviewing topography and only made excuses as to why other sites should be eliminated. 1. Segments 4 & 5 – Corona Del Mar to Crystal Cove & Laguna Beach, Crystal Cove to Aliso Beach. The Santa Ana Water Board fails to adequately assess Segments 4 and 5 as the best site for minimizing marine life mortality. The Santa Ana Water Board excuses Segment 4 and 5 by simply taking accepting Poseidon's analysis that shoreline topography would make subsurface intakes infeasible. The Santa Ana Water Board states: "The offshore shelf area of this segment is a steep, erosional environment with minimal deposition, suggesting a lack of feasibility for a SIG. The shoreline topography is also steep. Intake structures that do not result in marine life mortality, including shallow and deep subsurface wells in Segment 4 are likely to encounter low permeability sediments and basement rocks. Thus, a prohibitively large number of wells would be required to meet the Project's needs;" and "The geological conditions in the offshore shelf in Segment 5 are very similar to those of Segment 4." The Santa Ana Water Board has failed to provide evidence in the record that steep shoreline topography would encounter low permeability sediments and basement rocks. The Santa Ana Water Board simply takes Poseidon's assertions without any modeling to justify excluding Segment 4 and 5. And the record is not clear as to how many wells would be required to meet the Project's needs. How many wells are required? And as discussed above, why is the Project's size used to justify the exclusion of a site? Alternative sites must be assessed independently. The evidence in the record does not bridge the analytical gap to conclude that Segments 4 and 5 are infeasible. 2. Segment 6 - Aliso Beach to Dana Point Headlands. The Santa Ana Water Board fails to adequately assess Segment 6 as the best site for minimizing marine life mortality. The Santa Ana Water Board finds "Discharger's Appendix E indicates that there would be minimal	Then specific sites located in Segments 1 and 2 were evaluated using the same factors. Contrary to CCKA's assertion throughout comment II.A, the site analysis appropriately considered whether the potential sites were feasible for a 50 MGD facility because the Discharger has demonstrated an identified need for desalinated water that is consistent with the MWDOC UWMP and the OCWD Groundwater Management Plan (Update 2015). (See response to comment I.D above.) In the first assertion, CCKA argues that the site analysis for Segments 4 & 5 – Corona Del Mar to Crystal Cove and Laguna Beach, Crystal Cove to Aliso Beach is not adequate. The Santa Ana Water Board does not agree. As noted in Attachment G.1, Section 1 of the Tentative Order, the hydrogeology of the seafloor in Segments 4 and 5 is not conducive for subsurface intake systems. Additionally, both of these segments have biologically sensitive habitats: Crystal Cove State Marine Conservation Area, Robert E. Badham ASBS State Water Quality Protection Area, Irvine Coast ASBS SWQPA and Heisler Park ASBS SWQPA are located in Segments 4 and 5. Comparatively, these segments are not a better location for the Facility than Segments 1 and 2. In the second assertion, CCKA argues that the site analysis for Segment 6 – Aliso Beach to Dana Point Headlands is not adequate. The Santa Ana Water Board does not agree. As noted in First, the Ocean Plan requires that for a proposed desalination facility, "…the regional board shall require the owner/operator to evaluate a reasonable range of nearby sites, including sites that would likely support subsurface intakes." There is no Ocean Plan requirement for the regional board to require modeling or physical testing to

	access to seawater via subsurface intakes due to low permeability sediments and basement rocks in Segment 6 that are likely to result in low subsurface well yields."219 The Santa Ana Water Board again excuses Segment 6 without any modeling or physical test well to adequately assess the feasibility of subsurface intakes. The Santa Ana Water Board also concludes that "[i]ntake structures that do not result in marine life mortality, such as subsurface wells, would not be capable of achieving the required volume of source water for the Facility."220 Again, the Santa Ana Water Board uses the predetermined design capacity of 50 MGDs to determine subface wells would not be capable of achieving the required volume of water Poseidon demands. The evidence in the record does not bridge the analytical gap to conclude in the Santa Ana Water Board's Findings that Segment 6 is infeasible. 3. Segment 7 - Dana Point Headlands to San Juan Creek. The Santa Ana Water Board fails to adequately assess Segment 7 as the best site for minimizing marine life mortality. The Santa Ana Water Board ignores its mandate to minimize marine life mortality by finding that: "South Coast Water District proposes to construct the Doheny Desalination Project (a.k.a. South Orange Coastal Ocean Desalination Project) in Segment 7, and that facility would use slant wells to draw in up to 15 MGD of seawater. Subsurface wells located in this area are not likely to yield higher volumes from the San Juan Valley Groundwater Basin (Basin) than what has already been proposed by the South Coast Water District." The Doheny Desalination Project is under regulatory review, just like Poseidon. There is nothing in the OPA to excuse Poseidon from considering Segment 7 simply because another project is being considered in the area. Furthermore, there is no evidence in the record that Poseidon's surface intake will not yield higher volumes than was already being proposed. The Santa Ana Water Board goes on to excuse Segment 7 by stating that "subsurface wells drilled outside the Basin are likely to encounter thin sediment cover, low permeability sediments, and basement rocks. Thus, it appears unlikely that subsurface wells would be capable of achieving the required feedwater rates for the proposed desalination facility." The Santa Ana Water Board again excuses Segment 7 without any modeling or physical test well to adequately assess the feasibility of subsurface intakes. Moreover, the Santa Ana Water Board uses the predetermined design capacity of 50 MGDs to determine subface wells would not be capable	conduct this analysis. The Santa Ana Water Board considered the information submitted by the Discharger, additional factors to be considered as listed in the Ocean Plan, Chapter III.M.2.b and best professional judgement to assess the feasibility of subsurface intakes segments in Segment 6. Attachment G.1 of the Tentative Order, Section 2 of the Tentative Order, the hydrogeology of the seafloor is not conducive for subsurface intake systems. Additionally, Segment 6 has biologically sensitive habitats: Laguna Beach State Marine Conservation Area and Dana Point State Marine Conservation Area. Comparatively, this segment is not a better location for the Facility than Segments 1 and 2. In third assertion, CCKA argues that the site analysis for Segment 7 – Dana Point Headlands to San Juan Creek is not adequate. The Santa Ana Water Board does not agree. As noted above, modeling or physical testing is not a requirement of the Ocean Plan. As noted in Attachment G.1 of the Tentative Order, this area already has a seawater desalination facility under design at a smaller capacity. Because the Doheny seawater desalination plant is already underway in this segment, another desalination facility would need to be located further north up the coast and it would be close to the Dana Point State Marine Conservation Area. Comparatively, this segment is not a better location for the Facility than Segments 1 and 2. In the fourth assertion, CCKA argues that the site analyses for Segments 8 & 9 – San Juan Creek to Segunda Deshecha Canada and Segunda Deshecha Canada to San Mateo Point are not adequate. The Santa Ana Water Board does not agree. As noted in Attachment G.1, Section 1 of the Tentative Order, Segments 8 and 9 were eliminated from

	of achieving the required volume of water Poseidon demands. The evidence in the record does not bridge the analytical gap to conclude in the Santa Ana Water Board's Findings that Segment 7 is infeasible. 4. Segments 8 & 9 - San Juan Creek to Segunda Deshecha Canada & Segunda Deshecha Canada to San Mateo Point. The Santa Ana Water Board fails to adequately assess Segments 8 and 9 as the best site for minimizing marine life mortality. The Santa Ana Water Board finds: "The shoreline along Segment 8 generally consists of a sandy beach extending unobstructed along the coast. The sandy beaches are relatively narrow and are backed by a developed coastal terrace that extends inland to the coastal bluffs, generally 100 feet in height. Segment 8 is located within the Oceanside Littoral Cell and eroding sea cliffs are characteristic of this area. Because of a limited aquifer system in this Segment, subsurface well yields in Segment 8 are expected to be low, such that a prohibitively large number of wells would be required to meet the proposed desalination facility's needs.; and "The shoreline along Segment 9 is similar to that of Segment 8, a generally narrow, sandy beach extends unobstructed along the coast and is backed by bluff faces extending approximately 100 feet in height." The Santa Ana Water Board again excuses Segments 8 and 9 without any modeling or physical test well to adequately assess the feasibility of subsurface intakes. Moreover, the Santa Ana Water Board uses the predetermined design capacity of 50 MGDs to determine subface wells would not be capable of achieving the required volume of water Poseidon demands. The evidence in the record does not bridge the analytical gap to conclude in the Santa Ana Water Board's Findings that Segments 8 and 9 are infeasible.	consideration because of the site's steep topography, mass wasting of the beach, and the presence of numerous kelp beds located offshore. Therefore, these segments are not a better location for the Facility than Segments 1 and 2.
II.B	II.B The Santa Ana Regional Board's use of land use constraints, social impacts, and other CEQA considerations to eliminate the remaining subsurface intake sites was unlawful and erroneous under the OPA. After narrowing the sites based on erroneous technical feasibility, the Santa Ana Water Board inaccurately states that it "considered the other feasibility factors for subsurface intakes set forth in chapter III.M.2.d.(1)(a) to make a final determination of the feasibility of subsurface intakes at the proposed site, Site 1G." Chapter III.M.2.d.(1)(a) of the OPA states: "The regional water board shall consider the following factors in determining feasibility of subsurface intakes: geotechnical data, hydrogeology, benthic topography, oceanographic conditions, presence of sensitive	The Santa Ana Water Board appropriately considered land use constraints, social impacts, and other considerations affecting feasibility in the site analysis. Chapter III.M of the Ocean Plan uses the same definition of feasible as CEQA: "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors." (Ocean Plan, p. 62.) Land use constraints are factors that affect feasibility—if a site is not zoned for a use that would allow a desalination plant, the construction and

	habitats,* presence of sensitive species, energy use for the entire facility; design constraints (engineering, constructability), and project life cycle cost." First, it is important to note that the feasibility criteria listed in the OPA did not include consideration of land use constraints, social impacts or other considerations used in Poseidon's alternative sites analysis. As clearly stated in the final adoption hearing discussion on feasibility criteria, these considerations were outside the review required for compliance with Water Code section 13142.5(b) analyses. The State Water Board concluded that this discussion should be covered in the project CEQA review. And the proposed CEQA Addendum fails to include the required analyses. CEQA requires a Substantive EIR for changed circumstances like the adoption of the OPA, and that should include a revision to the findings of alternative sites and the conclusion of significant social impacts (e.g., the dislocation of beach-goers during the development of slant wells), and whether those impacts demand a Statement of Overriding Conditions given the stated requirement in OPA to use subsurface intakes. The State Water Board did not intend the CEQA definition of "feasible" to override the considerations of "feasible" within the OPA. As discussed above (in the freshwater drawdown section) that State Water Board Members were clear during the adoption hearing that a feasibility analysis under the OPA should be confined to the criteria explicit in the OPA and that any CEQA analysis should be restrained to a CEQA document and not used to determine subsurface feasibility. To allow the broad definition of CEQA to undermine the criteria explicitly set out by the State Water Board defeats the purpose of adopting the OPA at all. The Santa Ana Water Board cannot use permit timing as a justification for excluding alternative sites that could make subsurface intakes feasible for this facility. The Santa Ana Water Board stated that: "In the event the Santa Ana Water Board did not find that site 1G was the best site feasible and that one of the alternative sites evaluated was the best site feasible, the Discharger would need to submit a new NPDES permit application and request for Water Code section 13142.5(b) determination to the Santa Ana Water Board and would need to obtain the following new permits and approvals, which is estimated to take 5 years." The Santa Ana Water Board's responsibility is to determine the best available site for minimizing marine life mortality – not what site is the most ideal for the applicant. To use timing delays due to required permits as a justification for excluding sites is clearly outside of the parameters of the OPA.	operation of a desalination plant cannot be accomplished at the site and thus would not be feasible. Social impacts clearly fall under the social factor for feasibility. During the development of the Desalination Amendment, the environmental groups advocated for a definition of feasibility that was narrower than the CEQA definition. However, the State Water Board chose to incorporate CEQA's definition of feasible "because it is better suited to requirements governing facilities yet to be built, each with a significant range of site-specific variables." (Desalination Amendment Staff Report, response to comment 6.12, p. H-27.) The commenter incorrectly insists that the feasibility assessment for subsurface intakes is not subject to CEQA's definition of feasible. As just discussed, the CEQA definition is the same definition used in the Ocean Plan, and the definition applies to the feasibility of subsurface intakes. The Ocean Plan "does not offer two separate feasibility determinations. Rather, it includes a general definition of what is meant by the term, and for the question of whether a subsurface intake is feasible technology, lists specific factors that are to be considered in applying that definition." (Desalination Amendment Staff Report, response to comment 12.6, p. J-66.) Thus, the whole feasibility analysis is subject to the broader definition of feasible that mirrors the CEQA definition. The Board is not required to prepare a subsequent EIR to apply the feasibility criteria required under the Ocean Plan. (See response to comment V.) The Santa Ana Water Board agrees that its responsibility is to determine the best available site to minimize the intake and mortality of

	Second, the Santa Ana Water Board justifies excluding alternative sites because they "do not have an existing intake or discharge infrastructure and therefore, construction at the alternative sites would have the following added impacts as compared to Site 1G." Again, the Santa Ana Water Board's responsibility is to determine the best site for minimizing marine life mortality – not to give Poseidon the most convenient site because existing intake and discharge infrastructure exists. It is important to remind the Santa Ana Water Board that the "existing intake and discharge infrastructure" cited as the reason to exclude alternative sites is the exact same intake and discharge pipe that was phased-out and now prohibited in California by the Once Through Cooling Policy. Next, the Regional Board justifies excluding alternative sites that could accommodate subsurface intakes based on criteria not included in the OPA, and consequently must be analyzed in a Subsequent EIR. Below we detail why each criterion used by the Regional Board is erroneous. • "Direct and permanent removal of benthic habitat for submerged intake and discharge infrastructure;" "Seafloor excavation and disturbance would occur at the location of the surface intake on the seafloor, resulting in direct and temporary removal of benthic." The State Water Board already concluded that subsurface intakes are the preferred technology because over the lifetime of the project subsurface intakes are the best to minimize marine life mortality. The Regional Board cannot now turn-around and justify excluding them because of benthic habitat disturbances. It is also important to note that slant wells are drilled from a site on land, and the removal of benthic habitat would only occur for the discharge infrastructure, which would be true of any alternative site. If the Regional Board uses removal of benthic habitat as a justification to exclude sites, then every alternative site that is not co-located with a power plant would be excluded – something clearly the State Water Board did not intend in the OPA. • "Potential for permanently restricted recreational beach access and disturbance in the immediate area of the footprint and access roads for the wet well/pump station." Beach access is not a consideration under the OPA, but is required in a Subsequent EIR. Furthermore, this would occur at any alternative site. There will also be disturbance in the immediate area for Poseidon's site as well. • "Habitat and increased turbidity in the construction area from disturbed sediments." Same would occur for Poseidon's site. • "Construction stormwater runoff, fugitive dust from construction vehicles, and potential release of drilling spoils could impact water quality of seawater or nearby wetlands." This is clearly a CEQA issue and	marine life, but the best available site must be a feasible site. To be feasible, an alternative must be "capable of being accomplished in a successful manner within a reasonable period of time . . . ." (Ocean Plan, p. 62.) The time required to obtain new or additional permits affects whether an alternative can be accomplished within a reasonable period of time. Thus, it is appropriate for the Board to consider the length of time that will be needed for the Discharger to obtain permits for an alternative site. The commenter next takes issue with the Board's consideration of existing infrastructure in the site analysis. In considering the best available site, the Ocean Plan explicitly requires the Board to consider whether there is existing discharge infrastructure. (Ocean Plan, ch. III.M.2.b.(6).) Moreover, the existence of intake and discharge infrastructure is relevant to the site analysis because the use or modification of existing infrastructure can eliminate or reduce the mortality of marine life associated with construction. (Desalination Amendment Staff Report, p. 51.) Sites with existing infrastructure are considered the best available site to minimize construction-related mortality. (Desalination Amendment Staff Report, p. 77.) Thus, it is appropriate for the Board to consider whether there is existing infrastructure in the site analysis. The commenter closes with a list of factors that they believe should not be considered by the Board. However, the listed factors are all relevant environmental and social factors that fall within the Board's consideration of site feasibility. Attachment G.1 of the Tentative Order, Section 2 to the Tentative Order, includes the factors to be considered for comparing Sites located in Segment 1 and 2 to determine

	requires a Subsequent EIR, particularly given the changed "cumulative projects" adjacent to the proposed site that could not have been known when the 2010 FSEIR was certified by the City. Further, the same would occur at Poseidon's site. The Regional Board justifies this by stating "similar impacts could be expected at [Poseidon's site], given the existing infrastructure, the impacts would be significantly less" without any data or justification for that conclusion. • "Increases in airborne and underwater noise could adversely affect aquatic plants and wildlife within coastal wetlands and could result in construction limitations for biological resource protection during bird breeding season." Same would occur at Poseidon's site. • "Increased greenhouse gas (GHG) emissions and air quality pollutants from construction equipment." This is clearly a CEQA issue and requires a Subsequent EIR, particularly given the changed "cumulative projects" adjacent to the proposed site that could not have been known when the 2010 FSEIR was certified by the City. This is not a OPA feasibility criterion. Same would occur at Poseidon's site. • "Construction would result in temporary restricted recreational beach access as well as recreational boating in the areas immediately adjacent to the offshore wedgewire screens and diffuser, as well as onshore wet well/pump station." This is clearly a CEQA issue and requires a Subsequent EIR, particularly given the changed "cumulative projects" adjacent to the proposed site that could not have been known when the 2010 FSEIR was certified by the City. This is not an OPA feasibility criterion. And the same impacts would occur at Poseidon's site. It is interesting to note that the above temporary impacts used to exclude alternative sites for subsurface intakes were the same impacts the Santa Ana Water Board found to not override the alternative site for a surface intake. In Phase III of the sites analysis, the Santa Ana Water Board pushed back on Poseidon by stating: "Santa Ana Water Board staff acknowledges that moving the intake to either Station D2 or U2 may have environmental impacts as a result of construction of a new surface intake. There may be impacts from pipeline construction needed to connect the new intake to an onshore desalination facility located adjacent to the AES HBGS. However, these impacts are temporary in nature, especially when compared to the 30-plus year operational life of the proposed Facility. The mortality associated with the operation of an intake at Station E is higher than an intake at Station U2 or D2 (Raimondi 2019) even when temporary construction impacts are considered."	the best site available as listed in chapter III.M.2.b (1) to (7). The Santa Ana Water Board used all of these factors to determine the best available site feasible. The conclusions for each of the alternative sites are set forth in Attachment G.1, Section 2 to the Tentative Order, and each site has its pros and cons; the Santa Ana Water Board determined after looking at all of the factors that Site 1G was the best site available feasible for the Facility. Lastly, the commenter asserts the criteria used to dismiss subsurface intakes were temporary in nature and a subsurface intake has less impacts over the operational life of the proposed facility. The commenter incorrectly characterizes the analysis of the subsurface intakes. It was determined that slant wells systems were not technically feasible at all of the locations, and seafloor infiltration galleries were not economically feasible. See comments I.B and I.C for more information. The assertion that subsurface systems were dismissed because of temporary construction impacts is not correct.

	The criteria in Phase II used to dismiss subsurface intake sites is also temporary in nature, especially when compared to the 30-plus year operational life of the proposed Facility. Further, a subsurface intake would have even less impacts over the 30-plus year operational life of the proposed facility.	
II.C	II.C. The Santa Ana Water Board failed to determine the best available site for an open ocean intake. After disputes with Poseidon over the best available site for the open ocean intake, the Santa Ana Water Board required a third-party consultant be hired. Dr. Peter Raimondi, a well-known expert in Empirical Transport Model (ETM)/Area of Production Foregone (APF) analyses, was engaged as a neutral third-party reviewer (NTPR) to make recommendations to the Santa Ana Water Board regarding the best site available for an open ocean intake. Dr. Raimondi's analysis indicated that stations D2 and U2 had potentially lower or comparable total entrainment Poseidon's site, based on the data available. Despite Dr. Raimondi's conclusions, Poseidon still asserted that its predetermined site was the best available for minimizing marine life mortality. However, the Santa Ana Water Board staff concluded that it "cannot agree with the Discharger's conclusion that Station E is the best site feasible for an offshore seawater surface intake based on environmental factors." The Santa Ana Water Board found that "Dr. Raimondi's review indicates that the best site feasible, based on the dual MLC/SLC metric, is not Station E but either U2 or D2." In this case, sites U2 and D2 are the best available sites for minimizing marine life mortality. However, the Santa Ana Water Board goes beyond the scope of the OPA to allow Poseidon to have their existing open ocean intake site. The Santa Ana Water Board staff stated it "will base a recommendation of the best site feasible on the other three factors that must be considered when determining feasibility: economic, social and technological." Despite the Santa Ana Water Board acknowledging that Station E is not the best available site for minimizing marine life mortality, staff inexplicitly allows Poseidon to site their intake at Station E simply because it is a cheaper option. The Best Available Site analysis under the OPA does not include any economic feasibility criteria to eliminate sites that are better at reducing marine life mortality. Furthermore, a site is not economically infeasible simply because it is more expensive. The Best Available Technology section does not even provide for economic feasibility between open ocean intakes, but the OPA is clear that economic feasibility cannot be determined simply because one option is more expensive than the other. The OPA is	In comment II.C., CCKA asserts that the analysis of the best available site for an open ocean intake system was not completed properly. The Santa Ana Water Board disagrees. The quote regarding the results of Dr. Raimondi's review of the best available site is taken out of context and did not include the entire paragraph. As explained in the response to comment II.B, feasibility includes an analysis of economic, environmental, technological, and social factors. Attachment G.1 of the Tentative Order, Section 3, appropriately applies these factors to determine the best available site feasible for the intake infrastructure. In this comparative process, the economic, technological, and social impacts associated with moving the intake system to Station U2 or D2 resulted in the Santa Ana Water Board determining that Station E was the best available site feasible based on those three factors (see Attachment G.1 of the Tentative Order, Section 3, Other Feasibility Considerations for Alternative Intake Locations). Section 3 of Attachment G.1 of the Tentative Order also discusses the issues with connecting the existing intake pipe to pipelines that would extend to alternative Station D2 or U2 for both offshore and onshore configurations. The commenter asserts that installing an intake at Station U2 or D2 by connecting to the intake a Station E will avoid costs and disruption of construction on shore. The Santa Ana Water Board disagrees that this is a viable alternative.

	explicit that economic feasibility "shall not be determined to be economically infeasible solely because subsurface intakes may be more expensive than surface intakes." Even if use of D2 or U2 as "the best available site feasible" for screened surface intakes could be dismissed simply because the benefits are outweighed by the cost, the benefit/cost analysis fails. The cost analysis reviewed proposed to trench up or down coast for 2 kilometers to install the conduit on-land, turn 90 degrees and trench under the beach, then construct trestles to install the pipe in the nearshore out to the required depth. It's hard to imagine a more expensive and disruptive way to accomplish the task. Arguably, the analysis must include the alternative of simply connecting new pipe to the existing conduit and extending the new conduit up or downcoast the superior alternative sites of U2 or D2. This would avoid the cost and disruption of construction onshore, as well as the trestles necessary in the nearshore. In conclusion, the benefit-cost analysis inadequately analyzed both the benefits of using D2 or U2, as well as the costs of those superior alternatives. The Santa Ana Water Board has failed to require the best available site for Poseidon's open ocean intake. There are other sites that exist that would reduce marine life mortality, more so than Poseidon's self-selected Station E. The Best Available Site analysis contains no economic feasibility element. Yet, Station E is being selected simply because it is cheaper than the other sites that would best minimize marine life mortality.	Attachment G.1., Section 3 explains that this concept was evaluated and not the preferred alternative to build an intake at Station U2 or D2. There are technical and social concerns associated with the construction of a pipeline from Station E to either Station U2 or D2. In summary, building a pipeline from Station E to Station U2 or D2 could use two construction options: open-cut or a trestle with sheet piling. The open-cut approach requires the removal of at a minimum 670,000 cubic yards of soil because it requires a 20-ft deep trench at 6:1 slope, it is anticipated that the trench will not remain open being in the surf zone, especially if the soil were to be side casted to eliminate the need to remove the soil from the trench using dump scows for offshore disposal. Side casting this amount of soil may have difficulties getting permitted. This option was not found to be technically feasible. The other method of the construction is to use a trestle with sheet piling between Station E and Station U2 and D2. This approach can construct about 2200 linear feet at a time. Therefore, three trestle systems would need to be used to construct the 6,500 linear feet or pipeline, and this system requires access to shoreline to transport materials and equipment. The haul roads and trestle would impede beach access. This process can build about 10 linear feet per day, and the system may not be used during winter storms when wave loading is high or during whale migration months. It is estimated that is will require 10 years to construct 6500 linear feet of pipeline between Station E and Station U2 or D2. This option was determined to have technical, social and timing challenges. See the Discharger's Appendix RRRRR, Part II and Attachment H is the consultant's report and included in Appendix RRRRR.

III	**III. The Santa Ana Water Board fails to use proper mitigation measures and does not require adequate mitigation to address the level of anticipated harm to marine resources.** The Santa Ana Water Board illegally erred in finding Poseidon's Mitigation Plan as the best available mitigation to minimize and marine life mortality. Under the OPA, the owner or operator of a facility shall submit a report to the Regional Water Board estimating the marine life mortality resulting from construction and operation of the facility after implementation of the facility's required site, design, and technology measures. The Santa Ana Water Board, however, erred by stating that the "proposed mitigation project constitutes restoration of coastal wetlands that fully mitigates for intake and mortality of all forms of marine life associated with construction and operation of the proposed Facility." We reiterate that the Draft Permit as a whole inadequately analyzed and compelled the use of best site, design and technology to minimize intake and mortality before relying on after-the-fact mitigation.238 This mitigation plan, including the milestones yet to be performed, was clearly a resource intensive effort. Had a similar effort been put into critiquing the "identified need," and/or calibrating the feasibility of slant wells as the required intake technology, as what was applied to the mitigation recommendation, the mortality from the construction and operation of the screened intake could have been all but eliminated. Therefore, neither the comments below, nor the recommendations for improving the mitigation plan, should be construed as an acceptance of any mitigation recommendations for the impacts associated with the construction and operation of the proposed screened intakes. The several tentative mitigation documents show the estimated Area of Production Foregone as 421.4 acres. Yet the calculated mitigation includes a mere 5.5 acres of restored wetlands and 15 acres of "restoration credit" from improved circulation. The overwhelming mitigation credit of 108 acres is awarded for "preserving" tidal influence that already exists. The draft mitigation plan is inadequate in multiple interconnected ways, which are described below.	The Santa Ana Water Board acknowledges that this paragraph introduces three separate comments and are responded to separately for comments III.A to III.C. .
III.A	III.A. The Santa Ana Water Board relies on outdated science and an inaccurate baseline to determine the best available mitigation. The Santa Ana Water Board's reliance on 17-year-old data is flawed. Of great concern, the baseline is inaccurate because it was calculated using conditions where a OTC facility was causing marine life mortality in the direct area. Poseidon will be operating in an area that no longer has an OTC facility intaking seawater and thus causing less marine life mortality. Therefore, it seems logically that the baseline to determine the proper	The dataset that was utilized to determine the marine life impacts was collected as part of a study that was designed to assess the impacts of a once-through cooling (OTC) facility in 2003-2004. To address the issue with the age of the data, the Discharger conducted a study in 2014-2015 to determine if the plankton data from the 2003-2004 study were representative of the current ichthyoplankton

	amount of mitigation should be determined in an area without the ongoing impacts of OTC. Poseidon should be required to mitigate for habitat lost without a once-through cooling intake. Water Code section 13142.5 (d) states: "Independent baseline studies of the existing marine system should be conducted in the area that could be affected by a new or expanded industrial facility using seawater in advance of the carrying out of the development." No independent baseline study was conducted by Poseidon. Moreover, the OPA requires that the "ETM/APF analysis shall be representative of the entrained species collected using the 335 micron net." Instead, the Santa Ana Water Board allowed Poseidon to rely on the "entrainment study for the Huntington Beach Generating Station, which was conducted in 2003-2004." First, the entrainment study by the Huntington Beach Generating Station was conducted 17 years ago and is not representative of the current of the entrained species. Second, the entrainment study was conducted while the Generating Station was in operation – and had been in operation, entraining marine life for decades. That is not the baseline in which Poseidon will be operating. Poseidon will be intaking marine life only after the Generating Station has stopped intaking seawater and entraining species. Therefore, the baseline analysis should account for habitat that is not impacted by the once-through cooling operations of the Generating Station. Finally, the data set used to calculate ETM/APF at the alternative sites U2 and D2 were inadequate. Use of the 2003-2004 data was deficient in important data including: adequate larval length data at alternative sites, and ocean current speeds at alternative sites were not sampled concurrently with entrainment samples.	community (Appendix Q, Tenera Environmental, dated November 6, 2015). Both the 2014-2015 and 2003-2004 studies were conducted offshore and within 330 feet of the HBGS intake. Appendix Q concluded that (1) the results of the 2014–15 study indicated that the data from the 2003–04 study was representative of nearshore larval fish populations in the vicinity of the AES HBGS intake; (2) the core group of common resident species was equally represented in both studies, suggesting that the entrainment impacts to species in any given year can be accurately assessed using the 2003–04 data; and (3) although there were differences in the numbers of taxa collected from the two studies, the differences largely reflected the greater sampling effort in the 2003–04 study. While the data from this study were used to calculate the marine life impacts via the ETM/APF, they were not used to establish a baseline. As provided in section VI.C.2.b of the Tentative Order, the Discharger is required to establish baseline conditions at the discharge location prior to the commencement of construction. To clarify the requirements of the baseline survey, the following language was added to Section VIII.D of the Monitoring and Reporting Program (Attachment E to the Tentative Order): "the Discharger shall conduct the receiving water core monitoring requirements (section VIII of this MRP) for two years before construction begins in the discharge location (intake and outfall related structures) as part of the biological surveys. In addition, the Discharger shall conduct a larval density study on a section of the Southern California Bight before the Discharger begins construction activities offshore as a before condition of the receiving waters." These provisions address the requirements of Water Code section 13142.5, subdivision (d), and chapter

		III.M.4.a.(2) of the Ocean Plan—the Discharger is required to conduct independent baseline studies prior to beginning construction of the Facility.
III.B	III. B. Alternative Mitigation Sites must be Included. The Fact Sheet summarizes that alternative sites were eliminated for several different reasons. For example: Los Cerritos Wetlands was also eliminated from further consideration for the following reasons: (1) the proposed restoration activities are still too speculative and could result in substantial delays and potentially prevent the discharger from offsetting operational impacts for several years after the project begins operating; and (2) other desalination projects (specifically, the West Basin Municipal Water District) have indicated that Los Cerritos could be used as a mitigation project. Oddly, the tentative permit rationale is that the restoration planning is still to speculative and, nonetheless, another desalination project proponent plans to use the site. Other project proponents' yet-to-be realized "plans" should not be adequate rationale for excluding this alternative site. Further, the rationale seems to imply that the Los Cerritos Wetlands site is too "speculative" yet ignores that planning for the future of Bolsa Chica Wetlands restoration is equally, if not more, speculative. A recent grant proposal cites numerous threats to the success of Bolsa Chica Wetlands, and the additional planning needed to ensure future success. The findings in the grant application conclude: "Without this planning effort, the wetlands are at extreme risk of failure within five years." For the reasons above and below, the tentative permit analysis of alternative and superior mitigation sites is inadequate, and alternative sites further from, and downstream of, the proposed intake site must be improved. Further, mitigation for ocean species must include nearshore artificial reefs downstream of the proposed intake site.	In comment III.B., CCKA asserts that alternative mitigation sites such as Los Cerritos Wetlands should be evaluated. Regarding the restoration and best available mitigation see response to comment 0177.03 - 0177.08 Regarding the Los Cerritos wetlands, as discussed in Attachment G to the Tentative Order, Finding 43, at this time, the future of the Los Cerritos wetlands remains uncertain from a regulatory perspective as the restoration plan has not been completed. It is therefore still too speculative to qualify as the best available mitigation feasible. As noted in the comment, Bolsa Chica wetlands are at risk of failure, which in part is why they provide an excellent mitigation opportunity. Poseidon's proposal to continue maintenance dredging of the ocean inlet is an essential component of any plan to prevent the failure of Bolsa Chica. Additionally, one of the biggest issues facing Bolsa Chica (and thus putting the system, "at risk of failure") is the inadequate circulation of water through the muted tidal basins. Attachment K to the Order requires Poseidon to work with the Bolsa Chica Steering Committee and State Lands Commission (the landowner) to enhance the muted tidal basins to further prevent possible failure of Bolsa Chica. Finally, in the event Bolsa Chica ceased to provide the required mitigation, Poseidon would not be in compliance with the Tentative Order and would be required to develop a new mitigation project (Bolsa Chica or otherwise) that meets the requirements of the Ocean Plan.

		Finally, although the commenter asserts that the creation of artificial reefs is required, the Ocean Plan does not include such a mandate. The Discharger did not propose the creation of an artificial reef as their mitigation project or analyze it as a mitigation alternative. The mitigation at Bolsa Chica was considered the best available feasible project among the mitigation projects that were considered and adequately mitigates the impacts to ocean species.
III.C	III.C. The Draft Permit misapplies the Mitigation Ratio Calculator. The Draft Permit includes a great deal of effort towards determining the mitigation ratio for wetlands restoration to replace marine species – "out of kind" restoration. The approach taken in the Draft Permit calculates an Area of Production Foregone (APF) of 421.4 acres, and through questionable reasoning, whittles the mitigation project to 5.5 acres of actual restoration and 15 acres of mitigation credit for water circulation. But the overwhelming majority of mitigation is 108 acres of credit for dredging the inlet for "preservation" – credit calculated by significantly modifying the Mitigation Ratio Calculator ("Calculator") input parameters and creating significant imprecisions in the output. Specifically, the OPA requires: "Mitigation shall be accomplished through expansion, restoration or creation of one or more of the following: kelp beds,* estuaries,* coastal wetlands, natural reefs, MPAs, or other projects approved by the regional water board that will mitigate for intake and mortality of all forms of marine life* associated with the facility." Attachment G5 correctly notes that the requirements in OPA section III.M.2.e.(3)(b)(i) do not include mitigation in the form of "preservation" from dredging the inlet. But the analysis then goes on to conclude: "[i]n the absence of definitions in the Ocean Plan, it is reasonable to consider definitions used by other agencies for similar compensatory mitigation programs to aid in defining these terms." However, the Draft Permit is unacceptable because it does not explain the "reasoning" for venturing outside the clear language of the OPA regulations, nor why it would not be more "reasonable" to require a mitigation project that actually meets the definition in the OPA regulations. The final permit must require mitigation that results in "expansion, restoration or creation" as mandated in OPA. Further, even if it were "reasonable" to import definitions used by other agencies to calculate mitigation credit for "preservation" that are not listed in OPA, the model chosen is not for "similar" circumstances. At a minimum, in circumstances like this, OPA regulations require:	In comment III.C., CCKA raises three assertions about the proposed mitigation. The comment incorrectly asserts that the Order and Attachment G.5, "limit mitigation options available to the Coastal Commission as those considered as 'adding' compensatory mitigation" or that they prohibit "the Coastal Commission from considering a different site(s) and mitigation project(s)." As noted by the commenter, Attachment G.5 to the Tentative Order states, "[t]he Santa Ana Water Board's decision on the mitigation required under the Ocean Plan does not bar the California Coastal Commission (or any other agency) from requiring any additional mitigation necessary to satisfy the agency's program requirements in the course of reviewing the Project." (Attachment G.5, p. 15.) Attachment G.5 continues to make it explicit that "[a]ll agencies retain their authority to require mitigation associated with their statutorily required approvals for projects such as the proposed Facility." (Attachment G.5, p. 15.) Other parts of the Tentative Order also address this issue: • Finding 54 of the Attachment G states, "[a]lthough the Santa Ana Water Board consulted with other agencies, the other agencies did not necessarily concur in the Board's approval of the MLMP; the Santa Ana Water Board's approval of the

	"For both in-kind and out-of-kind mitigation, the regional board may increase the required mitigation ratio for any species and impacted natural habitat calculated in the Marine Life Mortality Report when appropriate to account for imprecisions associated with mitigation, including but not limited to, the likelihood of success, temporal delays in productivity, and the difficulty of restoring or establishing the desired productivity functions." The "Calculator" was to be used to "offset the loss of aquatic resources resulting from dredge or fill activities permitted under Clean Water Act section 404" as articulated in Attachment G5. The "Calculator" was to be used to "offset the loss of aquatic resources resulting from dredge or fill activities permitted under Clean Water Act section 404" as articulated in Attachment G5 However, the "harm" to be mitigated in this case is not as easily calculated by measuring the acreage of lost or degraded wetland habitat and calculating mitigation through similar replacement wetland habitat. This mitigation requires calculating harm to marine life using the ETM/APF formula. The harm here is not from the degradation of wetlands, a onetime event that can be mitigated by the replacement or enhancement of "similar" habitat elsewhere – it is an on-going harm. The mitigation ratio must be changed to more accurately reflect the "imprecisions" inherent in the use of the "Calculator." Second, the deficiencies in the use of the Calculator are compounded by the fact that the mitigation project is sited where the compensatory mitigation feeds into the source of the harm. While it is not clear how to calculate a seeming cycle of replacement value that is itself subjected to the same harm being mitigated, it certainly is not a parameter that is "similar" to those used in the "Calculator." These complications are precisely what is described in the OPA as: "appropriate to account for imprecisions associated with mitigation, including but not limited to, the likelihood of success, temporal delays in productivity, and the difficulty of restoring or establishing the desired productivity functions." Nonetheless, the Draft Permit not only fails to "appropriately account" for the imprecisions, it rejects the recommendation of experts at the National Marine Fisheries Service (NMFS) to use a more conservative mitigation ratio, as well as the experts at the Coastal Commission to utilize a different mitigation calculation and/or mitigation site. Again, these imprecisions associated with the mitigation project proposed by Poseidon are avoidable. To rectify and actually mitigate the harm posed to the environment, the Santa Ana Water Board should require	Discharger's MLMP does not bind the consulted agencies or prevent them from requiring additional mitigation." (Attachment G, Finding 54); and • Attachment K provides, "[t]he findings and requirements for mitigation in this Order and the accompanying section 13142.5(b) determination (Attachment G to the Order) do not prevent or otherwise limit other agencies from requiring additional mitigation for the proposed Facility." (Attachment K, p. 1); These provisions make it clear that the Coastal Commission (and any other agency that has regulatory authority to require mitigation for the Facility's impacts) is not bound by the Santa Ana Water Board's conditional approval of the Discharger's MLMP. "Additional mitigation" as used in these statements in the Tentative Order includes any mitigation required by another agency that is different from the mitigation required by the Santa Ana Water Board. The use of the term "additional" was not intended to and does not prevent other agencies from considering mitigation opportunities outside of Bolsa Chica. Nor does it require the Coastal Commission or other agencies to approve Bolsa Chica as a mitigation project under their respective regulatory schemes. The Coastal Commission may reject the Bolsa Chica proposal outright and require the Discharger to perform an entirely different mitigation project if it determines that the Bolsa Chica mitigation project included in the Tentative Order does not meet its regulatory requirements. Coastal Commission staff has been an integral part of the interagency consultation that has occurred throughout the review of this project. Throughout the review of this

	Poseidon to locate the estuarine habitat downstream of the intake (or choose a preferred site for the intake) and create artificial reefs that are appropriately calculated to replace marine species downstream of the intake. 1. The Draft Permit inappropriately relies on Coastal Commission mitigation. As noted above, the proposed mitigation plan in the Draft Permit includes extraordinary imprecisions. It is clear in Attachment G5 that the Coastal Commission will require mitigation that is significantly different than what is required in the Santa Ana Water Board's permit. The Draft Permit, however, seems to limit mitigation options available to the Coastal Commission as those considered as "adding" compensatory mitigation. This effectively prohibits the Coastal Commission from considering a different site(s) and mitigation project(s) that minimize the imprecisions and ensure the replacement value of mitigating the intake and mortality of marine life. Further, while the Draft Permit language seeks to ensure the Coastal Commission has continuing authority to impose mitigation, the Coastal Act provides that the Coastal Commission cannot take action that conflicts with Regional Water Board decisions. To be consistent with the intent of this provision, the Santa Ana Water Board must make it clear that the Coastal Commission may replace this mitigation site with one that can meet the requirements of the Coastal Act. The permit should also make clear that the Coastal Commission's discretion to prescribe a different mitigation requirement would supersede this conditional mitigation plan and not create any conflict between the separate agencies' decisions. 2. Upstream mitigation requires additional acreage in the final permit. Under the Draft Permit, Attachment G finds: "The Discharger performed modeling to demonstrate the overlap of the Bolsa Chica (mitigation project) production area with the facility's source water body in Appendix OOOO. The Santa Ana Water Board finds that the Discharger has confirmed, via modeling, that the areal extent of the mitigation project's production area does overlap with the facility's source water body." However, the proposed mitigation plan does not account for the marine life exiting the mitigation site and entering the intake. It appears that, after discounting the APF using inappropriate "preservation" credit not allowed in OPA and a Calculator not designed to calculate these circumstances, the acreage required was	project, both Water Boards staff and the Discharger have been aware that Coastal Commission will likely have different requirements for mitigation than those contained in the Order. This is because their regulatory authority is separate and distinct from the Santa Ana Water Board's authority; however, nothing in the order limits, constrains, or precludes the Coastal Commission from exercising its authority to require different and/or additional mitigation for the marine life impacts caused by the project. Both Coastal Commission staff and the Discharger reiterated these points during the May 15, 2020 board meeting. To be clear, any mitigation required by the Coastal Commission that differs from that required by the Santa Ana Water Board will not conflict with the Santa Ana Water Board's decisions in the Tentative Order. If the Coastal Commission finds a different number of acres are required for mitigation or calculates a different number of acres for the Discharger's proposed mitigation activities, the Discharger will be required to comply with the mitigation requirements of both agencies. Regarding the second assertion, the comment is, in part, correct that an additional amount of mitigation is required. Two changes to the required mitigation have been made. First, in response to NOAA NMFS comment letter Santa Ana Water Board staff agreed to increase the habitat value for the shallow, soft bottom habitat directly impacted by the proposed intake structure by 30% (response to comment 0070.04). This lowered the mitigation ratio applied to coastal taxa from 1:5.8 to 1:4.5 resulting in additional mitigation being required of the Discharger. This change increased the required mitigation from 89.5 acres to 109.5 acres. Attachment G.4 to the Tentative Order, which was

	determined to be approximately 89.5 acres, and the calculated credit is approximately 128.5 acres. But the difference of approximately 39 acres does not appear to be in accordance with OPA section III.M.2.e.(2)(ii), which states: "[I]mpacts on the mitigation project due to entrainment by the facility must be offset by adding compensatory acreage to the mitigation project." The SED further clarifies: "Additionally, mitigation projects should be located close to the impacted area, but also at a sufficient distance from an open water intake so the mitigation project will replace the biological productivity that was lost instead of increasing entrainment at the intake." The proposed mitigation project is upstream of, and in close proximity to, the proposed intake structure. The OPA requires additional acreage to compensate for the fact that the productivity from the mitigation will itself be impacted by the intake. This requirement was not documented in the Draft Permit nor any of the Attachments. This analysis must be completed prior to adoption of the permit. Further, this issue was not a consideration in analyzing the "best site available" for the intake which may have minimized if not fully resolved the problem. Choosing a mitigation site in such close proximity to, and upstream of, the proposed intake/discharge presents a complication to calculating the necessary total acreage. Nonetheless, despite the clear requirement to add compensatory acreage, the Draft Permit is void of any discussion of the requirement for additional acreage, how to calculate the required additional acreage nor a requirement to add that mitigation. To avoid the added complication of increasing the acreage required to account for the intake and mortality of marine life originating from the proposed mitigation site, the Santa Ana Water Board should require Poseidon to locate the estuarine habitat downstream of the intake (or choose a preferred site for the intake) and create artificial reefs that are appropriately calculated to replace marine species downstream of the intake. 3. The Draft Permit must be modified and approved by the Santa Water Board to remedy for missed milestones.	posted on the Santa Ana Water Board's website on June 30, 2020, was revised to reflect this change. Second, as pointed out in the second assertion, Chapter III.M.2.e.(3)(b)ii does require that, "impacts on the mitigation project due to entrainment by the facility must be offset by adding compensatory acreage to the mitigation project." However, the impacts to the mitigation project were inadvertently omitted from the total mitigation acreage required of the Discharger. As discussed in more detail below, the total mitigation acreage should be 112.1 acres and will be adjusted in the Tentative Order. The Discharger provided estimates of the impact from the facility on the mitigation project in Appendix OOOO. Dr. Pete Raimondi, a neutral third-party reviewer, reviewed Appendix OOOO and determined that the method proposed by the Discharger to calculate the mitigation for potential entrainment of larvae dispersed from the proposed mitigation area (Bolsa Chica wetlands) was not scientifically valid and did not consider all estuarine species. Santa Ana Water Board staff conducted additional analysis to determine how much compensatory mitigation would be required to offset entrainment of larvae from the Bolsa Chica wetlands. Santa Ana Water Board staff discussed their proposed approach with Dr. Raimondi on July 16, 2020. Staff revised the ETM/APF calculations found in Dr. Raimondi's 2019 report, which included the ETM/APF results for the location of the proposed intake (Station E). Santa Ana Water Board staff developed a memorandum addressed to Dr. Raimondi documenting how and why the revisions were made (memorandum dated July 21, 2020). Specifically, staff recalculated the APF for the estuarine taxa (CIQ Gobies and Diamond Turbot) with a new Source Water

	The Draft Permit includes a long list of needed documentation to ensure the proposed mitigation achieves and maintains the mitigation objectives. However, the Draft Permit does not articulate the reason for deferring completion of the mitigation plan prior to adoption of the permit. Given that the Draft Permit fails to compel the use of subsurface intakes to minimize intake and mortality of all forms of marine life, and instead relies on after-the-fact and out-of-kind mitigation to replace lost biomass, the mitigation must be complete and enforceable prior to construction and operation of the facility. Specifically, Attachment K states: "The Santa Ana Water Board has determined that specific details regarding the restoration at the Fieldstone and Oil Pad/Road properties (inclusive of the circulation enhancement activities) can be developed with the Discharger and interested parties, including the California State Lands Commission and the Bolsa Chica Wetlands Steering Committee (Steering Committee) prior to the construction of the Facility." However, while staff believes it "can" be done, the conditions do not compel Poseidon to complete the required documentation prior to beginning construction. Before approval of this permit, the conditions of the final permit must make it clear that construction cannot begin until acceptance of the final mitigation plan, and approval by vote of the Santa Ana Water Board. Further, the timeline in the milestones does not begin to run until adoption of a Coastal Development Permit by the Coastal Commission. As mentioned above, there is no discussion of, nor contingency planning for, the likelihood that Coastal Commission will use a different method for calculating mitigation credits, and/or a different site or sites for achieving the mitigation required in the Coastal Act. The permit must be modified to clearly state what further actions will be necessary if the proposed incomplete mitigation plan in this permit is inconsistent with mitigation required by the Coastal Commission.	Area that included the 317-acre full tidal basin in Bolsa Chica, which is a spawning area for CIQ gobies and diamond turbot as well as other estuarine taxa. The net result was an increase of the Source Water Area for estuarine species from 2278.6 acres to 2595.6 acres. Staff made this change to the estuarine APFs originally calculated by both Coastal Commission staff and Poseidon. A new estuarine APF was calculated of 23.2 acres. This increases the previous APF of 20.4 acres (Table 2 of Attachment G.3 and Tables 2 and 3 of Attachment G.4 to the Tentative Order) by 2.8 acres. Therefore, the Discharger must perform an additional 2.8 acres of mitigation to offset the impacts on the mitigation project due to entrainment, increasing the final mitigation acreage from 109.5 acres to 112.1 acres (after applying the 1% credit to the revised total APF for the intake). This change will be added to the errata sheet for the Tentative Order. With respect to the third assertion, Sections III.I and IV.B.12 of the Tentative Order specifically prohibit any discharge or intake until the Discharger has submitted the supplemental plans in accordance with Attachment K, the Santa Ana Water Board has approved the Discharger's supplemental plans, the Discharger has obtained all permits and other governmental approvals necessary to implement all components of the mitigation project, and the Discharger has begun dredging the Bolsa Chica inlet in accordance with the MLMP. In addition, the requirements and milestones in Attachment K are permit requirements. If the Discharger fails to meet the requirements or milestones in Attachment K, the violation will be subject to appropriate enforcement action in the same manner as any other violation would be. In response to the issue of preservation under the Ocean Plan, see response to comment 70.07.

		Finally, the comment states, "the "Calculator" was to be used to "offset the loss of aquatic resources resulting from dredge or fill activities permitted under Clean Water Act section 404" as articulated in Attachment G5." However, this statement is not true because the quotation is taken out of context. The quoted text is in reference to the US Army Corps of Engineer's calculator that was not utilized in these analyses. As noted in attachment G.5, the mitigation ratio calculator developed for NOAA, was utilized by staff because it provided a site-specific estimate of mitigation acres available. Furthermore, the calculator inputs were discussed extensively throughout interagency meetings with State Lands Commission and NOAA Fisheries staff. Parameters in the calculator (e.g. T_{max}) were specifically adjusted to account for some of the uncertainty described in the comment. Staff does not recommend any changes to the calculator inputs at this point.
IV	**IV. The Santa Ana Water Board has failed to protect water quality as required by the Clean Water Act.**	The Santa Ana Water Board acknowledges that this paragraph introduces five separate comments and are responded to separately below for comments IV.A to IV.E.
IV.A	IV.A. The Santa Ana Water Board must reassess whether Poseidon's discharge can be comingled with wastewater as the best available technology. The Santa Ana Water Board has not properly analyzed whether Poseidon can comingle its brine with wastewater as the preferred technology for minimizing marine life mortality. The OPA states: "The preferred technology for minimizing intake and mortality of all forms of marine life resulting from brine discharge disposal is to commingle brine with wastewater (e.g., agricultural, municipal, industrial, power plant cooling water, etc.) that would otherwise be discharged to the ocean." However, the Santa Ana Board determined that "[w]astewater is not available to dilute the Facility's brine discharge. As such, the Santa Ana Water Board finds that commingling of the brine with wastewater is not feasible."260 The Santa Ana Water Board goes on to explain why wastewater isn't available:	The Santa Ana Water Board does not agree that a reassessment of the comingling with the wastewater from OCSD is needed. OCSD has not changed its plans to reuse its wastewater, so wastewater still is not available for commingling. Further, OCWD has stated that the Facility's desalinated water will not displace the use of recycled water by OCSD. According to OCWD, the Facility's desalinated water will be used to address future water supply demand and reduce OCWD reliance on an imported water supply from the Metropolitan Water District of Southern California. Also see responses to comments 0004.01, 0036.01, 0082.04, and 0168.02.

	"Wastewater is not available to dilute the proposed Facility's brine discharge at the proposed site (Site 1G) or at nearby sites. Orange County Sanitation District (OCSD) is the only wastewater agency with an ocean outfall in the area of the proposed Facility. OCSD has indicated that commingling of their wastewater with the Discharger's brine would not be compatible with their strategic plan for 100% reuse of reclaimable wastewater." This begs the question, if OCSD has committed to recycling 100 percent of their wastewater – then is Poseidon's water needed to justify not requiring subsurface intakes? In an August 8, 2019 letter to Santa Ana Water Board staff, OCWD indicates that they continue to evaluate conveyance options for the desalinated water and one option may be to use the desalinated water as recharge water at the Talbert Barrier and for the future 30 MGD Ground Water Replenishment System (GWRS) expansion.262 Poseidon claims that wastewater from OCSD will not be available for comingling of the desalinated water brine because OCSD's goal to recycle 100 percent of its wastewater. In the Santa Ana Water Board's January 8, 2020 letter to Poseidon they specifically ask "if the desalinated water supplants the OCSD wastewater for injection in the GWRS, then is there the new potential for comingling of the Poseidon brine with wastewater?" If Poseidon claims that OCSD will be recycling all of their wastewater, then the Santa Ana Water Board must reassess whether Poseidon's water is truly needed. If Poseidon claims that their water will be used to replenish the groundwater basin, then the Santa Ana Water Board must reassess whether the best available technology to dilute Poseidon's brine is wastewater commingling.	
IV.B	IV.B. Complete antidegradation analysis and updated mitigation requirements must be conducted for the revised brine diffuser. Brine discharge has significant potential to impact the marine aquatic ecosystem and ocean water quality. Unlike other ocean discharges, concentrated brine sinks to the ocean floor rather than float upward into the water column where natural turbulence can disperse and dilute the discharge. If undiluted brine discharge sinks to the ocean floor, it has the potential to form a toxic layer that will destroy the benthic layer over time. In addition to creating a toxic plume and elevating salinity levels, brine can increase the concentration of the following: magnesium, boron, calcium, and sulfates. Further, a variety of chemicals are used throughout the desalination process and discharged into the coastal environment through brine that can be toxic for marine organisms, even at low concentrations. This permit has significant potential to harm marine life with the	In comment IV.B., CCKA asserts that (1) the Discharger's new diffuser design should be reviewed by a neutral, third-party expert, and (2) a complete antidegradation is required to determine the appropriate mitigation requirements. As discussed in Finding 28 of Attachment G to the Tentative Order, the diffuser design was evaluated by a third-party expert with the specific intent to assess minimization of marine life impacts. As noted by the commenter, the Discharger revised the diffuser design in response to the

	dispersal of brine using a multi-port diffuser that will not only impact marine life with the toxic impacts of the brine discharge, but will create highspeed jets of water that will kill marine life upon contact. Specifically, the Ocean Plan states that the "preferred technology for minimizing intake and mortality of all forms of marine life resulting from brine discharge is to commingle brine with wastewater that would otherwise be discharged to the ocean." Further, the use of wastewater to commingle with brine shall not preclude the future recycling of wastewater. In the case of the proposed ocean desalination facility, however, wastewater is not available due to regional goals of wastewater recycling and lack of available wastewater, as described by OCSD. The Ocean Plan then clearly defines multiport diffusers as the "next best method for disposing of brine when the brine cannot be diluted by wastewater and when there are no live organisms in the discharge."266 Multiport diffusers must maximize dilution, minimize the size of the brine mixing zone, minimize the suspension of benthic sediments, and minimize mortality of all forms of marine life.267 Poseidon initially proposed to modify the existing AES cooling water discharge pipe for brine disposal with the installation of a 3-port, 47-degree angle diffuser, which had significant potential to harm marine life through shear and by creating a surface boil. Under the initial design of the brine diffuser, the brine discharge could impact marine life from up to 30 miles from the facility site, threatening neighboring wetlands – such as the Bolsa Chica Wetlands – and the historic network of MPAs located off the California coast. The Santa Ana Water Board staff appropriately engaged a third-party expert, Dr. Phillip Roberts, to review the impacts of this design and offer an alternate design to meet the requirements of the Ocean Plan to maximize dilution and minimize mortality to marine life. Subsequently, Poseidon revised the diffuser design using the methodology recommended by Dr. Roberts and is proposing a fourteen-port linear diffuser to be installed at the end of the HBGS's current outfall to discharge the effluent brine. We encourage additional review by Dr. Roberts and other independent third-party experts to confirm or disaffirm the Discharger's claims that the new diffuser design will result in less shear and therefore, reduced impacts to marine life. Finally, the Draft Permit states that a complete antidegradation analysis is not required, due to the limited scope of the brine mixing zone and low impact on water quality. However, the state's Antidegradation Policy is clear that, in high-quality waters, baseline water quality must be maintained unless it is demonstrated that any change in quality will (1) be consistent with the maximum benefit to the people of the state ("maximum benefit"); (2) not unreasonably affect present or probable future beneficial uses; and (3) not result in water quality less than that prescribed by state policies. Failing to complete a full antidegradation analysis falls short	third-party expert review. The Discharger's revised diffuser design minimizes mortality of all forms of marine life. The Santa Ana Water Board's contractor (PG Environmental) and Board staff evaluated the proposed 14-port linear diffuser design and other alternative designs and confirmed that the Discharger's design was consistent with Dr. Roberts' design methodology. Ultimately, the diffuser design will be validated through the implementation of the receiving water monitoring requirements by the Discharger, as data for salinity and other parameters is collected in the ocean in the vicinity of the outfall to verify compliance with receiving water limitations included in the Tentative Order. If receiving water quality objectives are not met, the Discharger would be required to correct the issue and would be subject to any appropriate enforcement actions. Attachment E of the Tentative Order includes a monitoring program to assess the brine discharge. Turning to antidegradation, the section IV.D.2 of the Fact Sheet includes an antidegradation analysis. The analysis concludes that any degradation resulting from the discharge is consistent with the maximum benefit to the people of the state, will not unreasonably affect current or possible beneficial uses, and will not result in water quality less than prescribed in applicable policies. As provided in the State Water Board's Administrative Procedures Update 90-004 (APU 90-004), a complete antidegradation analysis is not required if "[a] Regional Board determines that the reduction of water quality will be spatially localized or limited with respect to the waterbody; e.g., confined to the mixing zone . . . ." (APU 90-004, p. 2.) In accordance with APU 90-004, the Santa Ana

	of state policies to preserve water quality and associated beneficial uses - such as the preservation of ecosystems for marine life – and a full antidegradation analysis must be completed in order to appropriately assign mitigation requirements for any harm to water quality or marine life caused by the project. At a minimum, we request that an independent third party review be conducted to evaluate the impacts of the new brine diffuser design on marine life, and that a complete antidegradation analysis be completed to evaluate the impact on water quality and the associated beneficial uses of ocean waters impacted by the brine discharge in order to determine the appropriate mitigation requirements for the project.	Water Board, using its best professional judgement and all pertinent information, determined that it is not necessary to do a complete antidegradation analysis because any degradation of water quality resulting from the discharge from the proposed Facility will be confined to the brine mixing zone. Thus, the simple antidegradation analysis included in the Tentative Order is sufficient. A complete antidegradation analysis is not required to determine mitigation requirements. Chapter III.M.2.e of the Ocean Plan establishes the mitigation requirements for the impacts related to the construction and operation of the proposed Facility. The Tentative Order includes mitigation requirements for all impacts to marine life in accordance with the Ocean Plan.
IV.C	IV.C. The Santa Ana Water Board should require stormwater to be captured and treated by the facility's reverse osmosis system to prevent degradation of water quality and to promote future water reuse. Stormwater, the runoff from rain that fails to absorb into soil or plants, mobilizes pollutants from industrial facilities and construction sites, and has large potential to cause significant degradation of water quality. The 1987 Clean Water Act amendments required the U.S. Environmental Protection Agency (U.S. EPA) to establish regulations to control stormwater discharges associated with industrial activity, and discharges from large and medium municipal separate storm sewer systems. The General Industrial Activities Stormwater Permit requires dischargers to comply with federal regulations to reduce or eliminate industrial stormwater pollution, to develop and implement a stormwater pollution prevention plan, and to perform monitoring of stormwater discharges. The General Industrial Stormwater Permit applies to all industrial activities, except construction activities. The Draft Permit appropriately requires a Stormwater Management Plan and requires that stormwater be managed by internal drainage systems at the facility, where it is "captured, treated, and discharged with the treated wastewater regulated under this Order." What is not clear, however, is how this stormwater will be treated. We request clarification that stormwater captured and treated onsite be treated through the facility's reverse osmosis system to ensure the discharged water does not cause environmental degradation and to allow render this water suitable for future reuse or water recycling	In comment IV.C., CCKA asserts that the stormwater from the facility must be captured and treated at the Facility. With regard to capture and treatment of the site's stormwater runoff, based on 12 inches of annual rainfall on the 12-acre site, there would be potential for production of between 6 and 12 acre-feet of drinking water per year compared to the approximate 67,000 acre-feet of drinking water produced annually from the ocean water process. The negligible addition of stormwater would not justify the construction, operation, and maintenance of a system designed to capture and introduce stormwater into the treatment system.

IV.D	IV.D The Draft Permit's effluent limitation for oil & grease and total suspended solids are inconsistent with the goals and requirements of the Ocean Plan. The Ocean Plan clearly outlines that the physical characteristics of water quality objectives, including the requirements that "floating particulates and grease and oil shall not be visible." Further, "the discharge of waste shall not cause aesthetically undesirable discoloration of the ocean surface" and "natural light shall not be significantly reduced at any point outside the initial dilution zone as the result of the discharge of waste." Finally, the discharge of inert solids in ocean sediments shall not be changed such that benthic communities are degraded. The Draft Permit reflects these requirements under the Discharge Specifications (IV.D.3), which appropriately state that: "Waste discharged to the Pacific Ocean must be essentially free of: a. Material that is floatable or will become floatable upon discharge; b. Settleable materials or substances that may form sediments which will degrade benthic communities or other aquatic life." Under F-6 ("Summary of Technology-Based Effluent Limitations"), however, the Draft Permit includes an effluent limitation of 13,000 (lbs/day) monthly average and 20,900 (lbs/day) weekly average for oil and grease, and 31,300 (lbs/day) monthly average for total suspended solids (TSS). Per guidance provided by the U.S. EPA, petroleum ether weighs 5.33 gallons per pound274 – meaning the Draft Permit would allow over 69,000 gallons of oil be discharged monthly and over 111,000 gallons of oil discharged be week. This sheer volume is both egregious and inconsistent with the Ocean Plan and goals of this Permit to prevent degradation of benthic communities or aquatic life. The Ocean Plan includes the following calculation to determine mass emission rates for discharge effluent limitations: "Equation 3: lbs/day = 0.00834 x Ce x Q, where: Ce = the effluent concentration limit, µg/L Q = flow rate, million gallons per day (MGD)"275 The Draft Permit, however, erroneously uses the following calculation to determine the mass emission rate in Table F-6:	In comment IV.D., CCKA asserts the effluent limitations for oil and grease (O&G) and total suspended solids (TSS) are inconsistent with the Ocean Plan. The Santa Ana Water Board disagrees with this comment. The oil and grease and total suspended solids effluent limitations are consistent with the Ocean Plan Table 4 Effluent Limits and are therefore protective of beneficial uses. CCKA erroneously indicates that the Board should have used the factor of 0.00834 instead of 8.34 to calculate the mass emission rate limits for O&G and TSS in the Tentative Order. To clarify, the 0.00834 factor applies when using a concentration of pollutant (C) expressed in µg/L. However, the 8.34 factor is appropriately used in the equation when the concentration of a pollutant is expressed in mg/L. The pollutant concentration of O&G and TSS are expressed in mg/L in the Tentative Order, so 8.34 is the correct factor.

	"MER (lbs/day) = 8.34 x Q x C, where Q is flow rate of 62.5 MGD and C is the concentration in mg/L." The use of 8.34, rather than 0.00834, as the multiplier in this calculation results in the inflated mass emission rate of 13,000 (lbs/day) monthly average and 20,900 (lbs/day) weekly average. Using the correct multiplier provided under the Ocean Plan, Table F-6 should be revised to reflect the following mass effluent limitations: 13 (lbs/day) monthly average and 20.9 (lbs/day) weekly average for oil and grease, and 31.3 (lbs/day) for TSS. Macrobenthic invertebrate community (e.g., small organisms, such as worms, clams, and burrowing shrimps) that live on and in ocean sediments are sensitive indicators of environmental change caused by discharges due to their limited mobility and susceptibility to the effects of changes in sediment quality. It is critical the final permit accurately reflect the effluent limitations provided in the Ocean Plan to ensure operation of the facility does not cause undue harm or otherwise degrade benthic communities and aquatic life off the coast of Huntington Beach.	
IV.E	IV.E. The Draft Permit's toxicity requirements must be revised to be protective of aquatic health. 1. The Draft Permit appropriately uses the Test of Significant Toxicity (TST) hypothesis testing approach to determine compliance with Whole Effluent Toxicity (WET). In 2010, U.S. EPA endorsed the peer-reviewed Test of Significant Toxicity (TST) hypothesis testing approach in the National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document (EPA 833-R-10-003, 2010) as an improved hypothesis testing tool to evaluate WET data, which is viewed as a superior approach for addressing statistical uncertainty when used in combination with U.S. EPA's toxicity testing methods and is implemented in federal permits issued by EPA Region 9. We strongly support the Santa Ana Water Board's use of the TST method. The TST statistical method provides an unambiguous "pass" or "fail" measurement of a test concentration's toxicity, and its low false positive and false negative rates provide more statistical power to correctly identify a test concentration as toxic or non-toxic. Although the TST method is not promulgated, there is U.S. EPA guidance on the TST method, which has withstood vigorous peer review and legal challenges. We wholly support and endorse the use of the TST approach for evaluating compliance with whole effluent toxicity (WET) in this permit as a scientifically robust and protective approach to ensure the discharge from the proposed ocean desalination facility does not cause aggregate harm to aquatic marine life. We further encourage the final Permit be explicit that the most	In comment IV.E., CCKA raises three assertions related to the toxicity requirements in the Order. Santa Ana Water Board does not agree with the assertion that an acute toxicity effluent limit is needed to protect beneficial uses of the receiving water. Specifying acute toxicity requirements would be redundant and no more protective than the chronic toxicity limits. According to the Ocean Plan, a separate mixing zone can be calculated for the acute toxicity objective if the minimum probable initial dilution (Dm), which is derived from the chronic mixing zone or zone of initial dilution (ZID), is greater than 24. In the case of the proposed Facility the Dm is 15 and an acute toxicity mixing zone cannot be determined to develop an acute toxicity effluent limit that would be more stringent (protective) than the chronic toxicity effluent. In fact, because the Dm is less than 24 both the acute and the chronic toxicity effluent limits would be essentially the

	sensitive species be identified and used in order to determine compliance with the WET method and the effluent limitations for toxicity included in the final permit. 2. The Draft Permit should be updated to include acute toxicity as an effluent limitation. Section 301(b) of the Clean Water Act and 40 CFR section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements, where necessary to achieve applicable water quality standards. Further, as required by 40 CFR Section 122.44(d)(1)(i), permits must include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. The Santa Ana Water Board appropriately includes effluent limitations for chronic toxicity, given the reasonable potential that the discharge from the proposed ocean desalination facility may cause or contribute to the toxicity of ocean waters, affecting the survival and reproduction of marine aquatic life. We fully support the inclusion of effluent limitations for chronic toxicity to account for the aggregate toxic effect of the mixture of pollutants present in the facility's effluent and to account for the uncertainty of the estimated effluent characterization. We further support the inclusion of a daily maximum acute toxicity objective of 1.0 TUc to reflect the effluent limitation for acute toxicity established by the Ocean Plan. The Draft Permit, however, should be updated to reflect a null hypothesis for acute toxicity, in addition to chronic toxicity. Under section V.A.2 of the draft Poseidon Permit, the calculation for the null hypothesis for acute toxicity accurately follows the TST approach, however, it appears that the Draft Permit erroneously states the that Discharger must report a failure of the null hypothesis for "chronic" toxicity, rather than "acute" toxicity under section V.A.2. We recommend the "chronic" be replaced with "acute" in section V.A.2 to ensure the final permit includes effluent limitations for both acute and chronic toxicity. Meanwhile, the Draft Permit only requires reporting of chronic toxicity exceedances. We request that the permit be updated to reflect the WET requirements for both acute and chronic toxicity. 3. The Draft Permit must include explicit enforcement actions and a Toxicity Reduction Evaluation (TRE) must be initiated immediately for any finding of an exceedance for acute or chronic toxicity to identify and eliminate the cause of toxicity.	same for the proposed Facility. Section III.C.4.b. of the 2019 Ocean Plan states the following: "b. Determining a Mixing Zone for the Acute Toxicity* Objective The mixing zone for the acute toxicity* objective shall be ten percent (10%) of the distance from the edge of the outfall structure to the edge of the chronic mixing zone (zone of initial dilution*). There is no vertical limitation on this zone. The effluent limitation for the acute toxicity* objective listed in Table 3 shall be determined through the use of the following equation: **Equation 2:** Ce = Ca + (0.1) Dm (Ca) where: **Ca** = the concentration (water quality objective) to be met at the edge of the acute mixing zone. **Dm** = minimum probable initial* dilution expressed as parts seawater* per part wastewater (This equation applies only when Dm > 24)." [Note that the asterisks (*) in the above quote refer to the Ocean Plan's definitions for these terms found in Appendix I.] Again, because the Dm that's being applied to effluent limit calculations for the Facility is less than 24 (actually Dm = 15), the 10% of the chronic mixing zone or 10% of the Dm that may be applied for the developing of a more stringent acute effluent is not applicable. Therefore, both the acute and the chronic effluent limits would be the same, pass or fail at the same in-stream waste concentration of 6.25%, which for now it would not be more protective.

	The Ocean Plan requires a Toxicity Reduction Evaluation (TRE) "if a discharge consistently exceeds an effluent limitation based on a toxicity objective." The Draft Permit, however, requires Poseidon to create and implement an "Initial Investigation Reduction Evaluation" (IITRE) whenever there is an exceedance of chronic toxicity, and to conduct a TRE only if the IITRE does not identify or rectify the cause of toxicity. As experienced at the Poseidon-Carlsbad ocean desalination facility, accelerated monitoring and even a TRE is not sufficient to address, resolve, and prevent occurrences of toxicity in the plant's discharge. Since the plant began operation in 2015, it has had over 70 reported occurrences of chronic toxicity exceedances. Disturbingly, the Poseidon-Carlsbad facility had 21 consecutive months of reported chronic toxicity exceedances – excluding the months that the facility conveniently failed to report its monitoring results for chronic toxicity of its reverse osmosis permeate discharge. A TRE is required for the Poseidon-Carlsbad facility, yet despite the requirement to conduct a TRE to identify and minimize sources of toxicity, the facility has repeatedly reported values of 40.0 TUc, which far exceed the monthly average limit of 16.5 TUc. It is critical that the final permit for the Poseidon-Huntington Beach ocean desalination facility not allow for this continued behavior and include explicit enforcement actions that will be taken for the failure of the facility to meet its chronic toxicity effluent limitations or the failure to report its monitoring results - and in cases of extreme or continued toxicity, require that the facility cease its plant operations until the sources of toxicity is identified and entirely eradicated. We request the permit be updated to require the discharger to immediately initiate a TRE, rather than accelerated monitoring as outlined in the IITRE, upon any exceedance of acute or chronic toxicity in order to detect and prevent the continued cause of toxicity without delay. Accelerated monitoring in place of a TRE is an ineffective method to address toxicity and only causes delay in identifying the cause of toxicity. Further, initiating additional testing, rather than a TRE, is not appropriate and is inconsistent with the use of effluent limits. We respectfully request a detailed TRE work plan be submitted to the Santa Ana Water Board, in place of the IITRE, and be implemented upon any finding of a chronic or acute toxicity exceedance. Further, we request the Santa Ana Water Board include explicit enforcement actions that would be taken upon any finding of toxicity or any failure to report its monitoring results, such as the cease of plant operations until the cause of toxicity is identified and resolved in order to prevent significant degradation to the coastal environment located outside the facility.	There are two types of WET tests: acute and chronic. An acute toxicity test is conducted over a short time period and measures mortality. A chronic toxicity test is conducted over a longer period of time and may measure mortality, reproduction, and growth. The Tentative Order establishes effluent limitations for chronic toxicity to account for uncertainty associated with the estimated effluent characterization and aggregate effects of the pollutants present in the effluent. A pollutant at a low concentration could show chronic effects but no acute effects. Thus, chronic toxicity represents a more stringent and thus more protective compliance threshold than acute toxicity. Monitoring for acute toxicity and performance goals have been established to further evaluate potential impacts to the receiving water. Finally, based on Santa Ana Water Board consultation with the San Diego Water Board (SDWB) and the findings regarding the compliance history of the Carlsbad Desalinization Plant (CDP) included in the Carlsbad Facility Fact Sheet (Attachment F) of Order No. R9-2019 , the alleged chronic toxicity effluent limit violations that CCKA cite as part of its argument have been dismissed by the SDWB (see response to comment 179.07). The Santa Ana Water Board will evaluate compliance of the proposed Facility with respect to the Tentative Order based on the actual performance of the proposed Facility once it is operational. Section V.D. of the monitoring and reporting program or Attachment E of the Tentative Order includes appropriate language regarding the authority of the Executive Officer of the Santa Ana Water Board (SAWB) to require the Discharger to initiate a TRE when warranted based on an evaluation of the testing results and additional information.

		With respect to the comment that the permit should explicitly specify that the most sensitive species be utilized for WET testing, this is already specified in the Monitoring and Reporting Program – Attachment E, section V for both acute and chronic toxicity testing.
V	**V. The Santa Ana Water Board is the Lead Agency for the Poseidon-Huntington Beach CEQA Project and has unlawfully segmented its environmental review of the Project.**	The Santa Ana Water Board acknowledges that this paragraph introduces the comments that are addressed below in the responses to comments V.A to V.C.
V.A	V.A. The Project has not yet received a full environmental review, despite the existence of the Interagency Permit Sequencing Framework Agreement. As the local land use authority and delegated local permitting agency under the California Coastal Act, the City of Huntington Beach (City) originally assumed CEQA lead agency status to prepare an EIR for the Project. The Final EIR, certified by the City in September 2010, evaluated environmental impacts associated with construction and operation of the desalination facility itself, as well as construction of the Project's proposed water transmission lines and pumps that would convey the treated product water for direct, immediate use by local customers. Although the pipeline distribution route had not yet been finalized, the 2010 EIR properly evaluated its impacts as an integral and necessary part of the Project, while also identifying and evaluating possible alternative pipelines routes to provide "a worst-case analysis" and "to ensure that all potential alignment segments are analyzed." There was never any question that transmission of water produced by the desalination facility was an inextricable component of the Project and that the attendant environmental impacts were, therefore, a necessary part of the CEQA analysis. Based on this EIR, the City approved a coastal development permit for those portions of the Project within its jurisdiction. Concerned parties appealed the City's permit to the Coastal Commission, pursuant to the Coastal Act, and that appeal remains pending for final resolution by the Coastal Commission. The City takes the position that it has no further discretionary authority over the Project and thus no further CEQA obligations. Poseidon never built the Project as approved by the City in 2010 or obtained the requisite final approvals from at least four other public agencies – the Coastal Commission, the Santa Ana Water Board, the Water District, and the State Lands Commission. In the intervening years since 2010, critical regulatory	The Santa Ana Water Board is a responsible agency for purposes of CEQA and the Addendum is the appropriate CEQA document to address the changes to the diffuser designer. The Board cannot assume the duties of lead agency to prepare a subsequent EIR because none of the factors that would allow the Board to prepare a subsequent EIR are present. As noted by the commenter, the State Lands Commission, the Santa Ana Water Board, and the Coastal Commission entered into an Interagency Permit Sequencing Framework Agreement (Framework Agreement) to coordinate the agencies' review of the Huntington Beach Desalination Facility. The Framework Agreement provided that the State Lands Commission would rely on the 2010 Final Subsequent Environmental Impact Report (2010 FSEIR) and prepare any additional CEQA analysis required in connection with its review of the project. The Framework Agreement also provided that the State Lands Commission would reasonably consider any comments from the Coastal Commission and the Satna Ana Water Board regarding the CEQA analysis so the other agencies could rely on the analysis.

	developments, changed circumstances, and new information have required Project design changes and rendered the 2010 EIR inadequate to support the remaining discretionary agency approvals. There has never been any dispute, therefore, that an updated environmental analysis was required under CEQA section 21166 before the Project could proceed. With the adoption of the OPA in 2015, the Santa Ana Water Board notified Poseidon that its discharge permits previously granted in 2012 were no longer valid for the Project. The Santa Ana Water Board requested that Poseidon submit additional information necessary to evaluate the Project's consistency with the new Desalination Regulations. In response to this new regulatory landscape and additional project design changes, Poseidon submitted a flurry of applications for new agency approvals, including one to the State Lands Commission to add wedgewire screens to the facility's intake system and a brine diffuser on the outfall pipes. Even with these technology changes, the Project's open-ocean intake system will kill approximately 74 million fish larvae each year and the high-velocity jets of saline brine from the discharge pipes will kill another 543 million larvae every year. Poseidon acknowledged that, to obtain these new approvals, updated CEQA review was required and a new lead agency would need to be identified. In its application to modify and extend the State Lands Commission tidelands lease, Poseidon explained that the State Lands Commission could either (1) remain a "responsible agency" under CEQA and rely on an updated environmental analysis and review to be prepared by the Coastal Commission, which could serve as the new CEQA lead agency in lieu of the City or, alternatively, (2) "choose to act as the Lead Agency under CEQA" and prepare the necessary updated EIR in accordance with CEQA Guidelines sections 15162 through 15164, a document upon which other agencies would then rely. Ultimately, the State Lands Commission, the Coastal Commission, and the Santa Ana Water Board formulated an agreement to coordinate and conduct the necessary updated CEQA review. Tellingly, early drafts of that agreement designated the State Lands Commission to "serve as Lead Agency to prepare and approve any additional environmental analysis required by the California Environmental Quality Act" and to consider the comments of the other two agencies sufficiently to allow these responsible agencies "to rely on the State Lands Commission's certified CEQA analysis." As originally drafted, the agreement provided that the Santa Ana Water Board would issue its tentative permit order after "the State Lands Commission's approval of any CEQA analysis and certification required in connection with the Poseidon Project." Consistent with this sequencing and allocation of roles, the draft agreement contemplated that "[a]s a CEQA Responsible Agency, the Regional Board shall consult, as necessary with the State Lands Commission regarding the areas of the CEQA analysis it may require" and that the Regional Water Board "agrees to rely on the 2010 [City EIR] in	In accordance with CEQA, the State Lands Commission relied on the 2010 FSEIR and certified a Final Supplemental Environmental Impact Report in 2017 (2017 FSEIR). The 2017 FSEIR analyzed the Discharger's proposed changes to the Facility's intake and discharge infrastructure. Since the certification of the 2017 FSEIR, the Discharger has made further changes to the discharge infrastructure. To aid with its review of the project, the Santa Ana Water Board engaged Dr. Phil Roberts, a neutral, third-party expert, to review the Discharger's diffuser design that was analyzed in the 2017 FSEIR. Dr. Roberts concluded that the Discharger's diffuser design was not the best available design feasible to minimize mortality of marine life. The Discharger modified the diffuser design to comport with Dr. Roberts's recommendations. The Santa Ana Water Board reviewed the potential environmental effects of the Discharger's changes to the diffuser design and determined that the changes do not involve new significant environmental effects or a substantial increase in the severity of previously identified significant effects that would require the preparation of a subsequent or supplemental EIR. Accordingly, the Board prepared the CEQA Addendum to address the changes to the diffuser design. (See CEQA Guidelines, § 15164.) The 2010 FSEIR retains informational value, and the 2017 FSEIR and Addendum adequately address the changes to the project. Thus, it is appropriate for the Board to rely on the 2010 FSEIR as augmented by the 2017 FSEIR and the Addendum. The Board's reliance on these documents complies with CEQA.

	combination with CEQA analysis prepared and approved by the State Lands Commission."282 In the final agreement, to which Poseidon was also a signatory, the "lead agency" language was deleted, but the remaining language makes it clear that the Santa Ana Water Board and the Coastal Commission intend to rely on the certified EIR prepared by the State Lands Commission to comply with their own "responsible party" CEQA obligations. Consistent with this "Interagency Permit Sequencing Framework Agreement," the State Lands Commission undertook the first – and so far only – updated CEQA review for the Project. But instead of stepping in as the substitute lead agency under CEQA, the State Lands Commission claimed that it was acting only in the capacity of a "responsible agency" and that it was evaluating only a so-called "Lease Modification Project," "not the larger desalination project approved in 2010." The final updated EIR was unequivocal in its limited scope: "This Supplemental EIR addresses only the Lease Modification Project (i.e., the proposed modifications to the approved 2010 Project that lie offshore within the [tidelands lease] footprint) which includes operational change and two physical modifications" necessary to address the new Desalination Regulations. In response to public comments about the impropriety of this limited scope, the State Lands Commission explained that it "stands by its determination [in the draft EIR] that the proper project scope. . . encompasses those activities proposed in Poseidon's application to the Commission, specifically, the proposed installation on subsea pipelines . . . of wedgewire screens and a multiport diffuser." As the State Lands Commission Executive Officer subsequently stated at the public hearing to adopt the lease amendment, "we approached the CEQA review, and our analysis and processing of the application within that narrow lens of the minor modification to the existing property rights, and the existing authorization that the [Lands] Commission had already granted in 2010." There is thus no dispute in the record that the "Lease Modification Project" evaluated in the Lands Commission's 2017 EIR differed dramatically in scope from the full Seawater Desalination Project evaluated in the City's 2010 EIR. In carving off one small part of the whole Project for updated environmental review, the State Lands Commission intentionally deferred significant portions of the necessary CEQA analysis to other agencies. In short, the truncated 2017 EIR intentionally omitted and deferred much of the alternatives analysis that courts have recognized as "the core of the EIR." Other agencies with discretionary authority over the Project warned against such improper segmentation and deferral of the updated impacts and alternatives analysis. For example, the Coastal Commission objected to the State Lands Commission's approach, explaining that CEQA environmental "review of solely the [Lease	CCKA and other environmental groups (collectively, CCKA) filed an action challenging the sufficiency of the 2017 FSEIR (2017 FSEIR Litigation). The trial court denied CCKA's petition for writ of mandate and the matter is now pending in the California Court of Appeal, Third Appellate District. The commenter raises several issues in the comment that are pending in the 2017 FSEIR Litigation and continues to contest the validity of the 2017 FSEIR. As required under CEQA, the Santa Ana Water Board must assume that the 2017 FSEIR complies with CEQA and proceed with its approval or disapproval of the Tentative Order; any approval of the project constitutes permission for the Discharger to proceed at its own risk pending a final determination of the litigation. (Pub. Resources Code, § 21167.3, subd. (b).) Section II.F of the Tentative Order was amended to reflect this.

	Modification Project] means that [the 2017 EIR] 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 deficient EIR meant that the Coastal Commission's evaluation of the Project would need to address "proposed project changes and changed circumstances that have occurred since 2010, the majority of which [were] not addressed in the [2017 EIR]." Other commenters similarly urged the State Lands Commission to assume CEQA lead agency status and undertake a comprehensive updated review for the whole Project. The Irvine Ranch Water District, the largest retail water agency in Orange County, asked the State Lands Commission to "defer consideration of the lease amendment until after a comprehensive environmental review of the changed project has been completed." The California Fish and Game Commission requested that "at a minimum the supplemental CEQA review . . . fully evaluate how the proposed open intake as modified would adversely impact productivity and connectivity of the affected [Marine Protected Area] system."	
V.B	V.B. Regulatory circumstances have changed since the completion of 2010 FSEIR. The Draft Permit states that the Santa Ana Water Board will rely on the 2010 FSEIR certified by the City, as well as the FSEIR certified by the State Lands Commission's "Modified Lease Agreement." But the Addendum only addresses changes to the intake and discharge technology considered in the "Modified Lease Agreement" project. The Santa Ana Water Board cannot adopt an Addendum to the "Lease Modification" project because it is not considering a changed "Lease Modification" project – the Santa Ana Water Board is considering permits for a new desalination facility under new regulations adopted in the OPA. Further, since certification of the City FSEIR in 2010, changed circumstances and new information have resulted in reasonably foreseeable significant impacts that were not, nor could have been known, in 2010. CEQA Guidelines section 15162(a)(2), as well as section 15162(a)(3), requires a Subsequent EIR. Further, section 15162(c) makes it clear the Santa Ana Water Board is responsible for preparing a SEIR for the entirety of the project – not an Addendum to the narrowly defined "Lease Modification" project. 1. There is diminishing water demand and overall need for the Project.	*Assertion 1: Diminishing Water Demand and Overall Need for the Project* The forecasting of the demand for water and supply needs are within the purview of the water supply agencies. As discussed in Attachment G.2 and in response to comment I.D above, the water supply agencies have identified a need for the desalinated water from the Facility and a subsequent EIR is not required. CCKA also raised this issue in the 2017 FSEIR Litigation. The trial court found that "the evidence before it [did] not sufficiently demonstrate that the need for the Project has changed such that further environmental review was necessitated." (*CCKA v. California State Lands Commission* (Super. Ct. Sacramento County, 2019, No. 34-2017-8002736), p. 15.) CCKA still has not shown that the need for water has changed such that additional environmental review is required.

	Spurred by newfound water supplies and innovative conservation measures, the demand for potable water in Orange County has fallen even as water supply grows. Using the 2010 Regional UWMP, the Water District previously projected total water demand in 2035 at 525,079 acre-feet per year. By 2016, however, that water demand projection for 2035 had fallen to 433,233 acre-feet per year, a 17.5 percent reduction. Indeed, new local sources of recycled water are becoming increasingly available for use, supplanting the need for a large desalination plant. In 2008, the Water District began its Groundwater Replenishment System, an approach whereby wastewater is recycled and treated to produce purified water for indirect potable reuse. This new practice provides a cost-effective solution to replenish water supply and is projected to produce 130,00 acre-feet per year of potable water. A similar Los Angeles recycling program, the Carson Indirect Potable Reuse Project, will provide Orange County with up to 65,000 acre-feet of additional potable water per year – more than the proposed capacity of the entire Poseidon-Huntington Beach Project, which would produce 56,000 acre-feet per year. Water users are simultaneously increasing their conservation practices, leading to an overall decrease in demand for potable water. While water demand was previously forecasted to increase during multi-year droughts, users have in fact achieved reductions on the order of 20 to 30 percent due to advancing practices in water conservation. Based on those projections, Water District staff now estimates water shortfalls through 2040 of only 6,300 acre-feet per year and has concluded that the Poseidon yield of 56,000 "would supply more water than needed in most ever year." Certain retail water agencies within Orange County that are customers of the Water District, including Irvine Ranch Water District, have questioned the need for this desalination facility. As the OCWD has itself confirmed, "there are many routes to [water] reliability" and the Poseidon-Huntington Beach Project is "not specifically necessary," but merely one option among others 2. The proposed aquifer injection distribution system includes environmental risks not previously considered or evaluated. In response to changing water demand and other circumstances, Poseidon is proposing new distribution plans for the Project's desalinated water. While the 2010 EIR evaluated transmission pipelines and pumps for direct delivery to the existing Orange County water distribution system, Poseidon now proposes to inject the desalinated water into an underlying aquifer for storage and future use, requiring the construction of up to 26 new injection wells. This plan is being considered by the Water District. In 2016, the Water District completed a 53-page report with cost estimates and potential layouts for the new distribution system, directed staff to	*Assertion 2: The proposed aquifer injection distribution system includes environmental risks not previously considered or evaluated* The 2010 FSEIR analyzed the proposed distribution system for the proposed Facility's desalinated water. The Discharger has not proposed any changes to that distribution system in their application for an NPDES permit or their request for a Water Code section 13142.5(b) determination that would require the Santa Ana Water Board to prepare a subsequent EIR. Orange County Water District (OCWD) currently has a non-binding Term Sheet with the Discharger regarding the purchase of 56,000 AFY and is the expected purchaser of the desalinated water. OCWD has indicated that it is evaluating options for the use of the water, including direct distribution and injection into the groundwater basin. However, OCWD has submitted letters the Board stating that it has not made any final decisions regarding how it will use the water and affirmed this position at the May 15, 2020 workshop on the Tentative Order. (See OCWD, letters to Santa Ana Water Board Executive Officer, July 7, 2016, Mar. 20, 2017, and Aug. 8, 2019.) At this point, it would be too speculative for the Santa Ana Water Board to analyze uncertain changes to the distribution system that neither the Discharger nor OCWD has proposed. To analyze such a speculative change as suggested by CCKA, the Board would need to guess at how much water might be injected, where the injections might take place, and all the other critical information needed to analyze the reasonably foreseeable impacts of injection and alternatives. Such a speculative analysis would not provide the public or the Board with meaningful information and is not required by CEQA.

	begin the environmental analysis of the work, and executed an agreement with Poseidon for reimbursement of CEQA analysis costs. This injection system poses serious environmental risks not previously considered or evaluated by the City. Water from the Project will contain concentrations of the chemical boron and total dissolved solids that exceed current groundwater quality objectives. It also will reduce the ability to recharge the aquifer basin naturally from storm water flows during wet years and will potentially place additional treatment burdens on agencies, like the Irvine Ranch Water District, that draw water from this aquifer. The 2010 EIR prepared by the City of Huntington Beach did not address any of these impacts because direct injection was not yet contemplated. 3. Cumulative Impacts. Since certification of the FSEIR by the City in 2010, changed circumstances include the development of several projects that in and of themselves create significant impacts, and in combination with the Poseidon proposed project would create even more harmful cumulative impacts. Since certification of the 2010 FSEIR by the City, AES has proposed, and is now in progress, to demolish the existing generators and construct replacement generators – a project that will continue during and beyond the development and operation of the proposed Poseidon Facility. The Department of Toxic Substances Control has proposed, and is now in progress to, remediate the Ascon toxic landfill – a project that will continue during the development and operation of the proposed Poseidon Facility. And it is reasonably foreseeable that the Magnolia Tank Farm will include site remediation and construction of a mixed-use development during construction and/or operation of the proposed Poseidon Facility. All these newly proposed and/or ongoing projects are immediately adjacent to or in very close proximity to the site proposed for the Poseidon Facility. Because these cumulative projects were not known, and could not have been known, when the 2010 SEIR was certified, CEQA demands a Subsequent EIR before the Regional Board can approve a permit for the proposed Poseidon Facility. Further, because the City no longer has discretionary approvals left to grant, and because these cumulative projects, including the SLC Lease Modification Project, include adverse impacts similar to those of construction and operation of the proposed Facility, new cumulative impact analyses are required for, at a minimum: Traffic, Air Quality and GHG emissions, Noise, Light, Hazardous Materials and Biological impacts to wetlands adjoining the property. 4. Issues Identified in the 13142.5(b) Analyses that Must be Included in CEQA documentation.	CCKA also raised this issue in the 2017 FSEIR Litigation. The trial court found that the "evidence [did] not support a finding that at the time the Commission prepared the Supplemental EIR, Poseidon had modified the Project such that it would be injecting the treated water into a local aquifer. . . . . the Petitioners [had] not sufficiently demonstrated that the Commission abused its discretion when it determined this potential change was speculative at the time . . . ." (*CCKA v. California State Lands Commission* (Super. Ct. Sacramento County, 2019, No. 34-2017-8002736), p. 14.) The potential change to the distribution system remains speculative and cannot be meaningfully reviewed by the Santa Ana Water Board at this time. *Assertion 3: Cumulative Impacts* The projects identified by the commenter were considered in the 2017 FSEIR. (See 2017 FSEIR, pp. 3-6 to 3-9; see also responses to comments 0004.17, 0014.03, and 0132.06.) *Assertion 4: Issues identified in the 13142.5(b) analyses that must be included in CEQA documentation* The Santa Ana Water Board is not required to prepare a subsequent EIR to consider the feasibility factors that clearly apply to chapter III.M of the Ocean Plan. (See response to comment II.B.) The limited circumstances that permit the Santa Ana Water Board to prepare a subsequent EIR are not present here. (See response to comment V.C.)

	While the OPA uses the definition of "feasible" from the CEQA definition, the list if issues for review under the section 13142.5(b) analysis differ from the issues to be reviewed in a CEQA document. The tentative permit erred in including CEQA issues in the section 13142.5(b) analyses, as well as failing to analyze those issues in a Subsequent EIR. As noted in the adoption hearing for the OPA by State Water Board legal counsel: "Our view is that the CEQA lead agency is going to be evaluating a range of alternative sites and alternative designs and technologies. And this is sort of classic CEQA. They will have to evaluate a number of alternatives. And they will reject some of those alternatives as either not meeting the project's objectives or not being feasible, for whatever reason. Not necessarily related to mortality of marine life. But it could be for aesthetics. It could be for energy consumption, greenhouse gases. Whatever the reason is, they will then whittle down the alternatives that are then further analyzed in more depth. That occurs prior to the Regional Board's 13142.5(b) determination. That is our expectation. And so I think in the situation where an alternative is rejected because of some other reason not related to mortality of marine life, like greenhouse gases, then that alternative would already have been eliminated when it comes to the Regional Board for a 13142.5(b) determination." The OPA section M.2.d.1.(a)(i) includes a prescriptive list of criteria to be considered in the 13142.5(b) technical feasibility determination: "The regional water board shall consider the following factors in determining feasibility of subsurface intakes:* geotechnical data, hydrogeology, benthic topography, oceanographic conditions, presence of sensitive habitats,* presence of sensitive species, energy use for the entire facility; design constraints (engineering, constructability), and project life cycle cost. Project life cycle cost shall be determined by evaluating the total cost of planning, design, land acquisition, construction, operations, maintenance, mitigation, equipment replacement and disposal over the lifetime of the facility, in addition to the cost of decommissioning the facility." Further, OPA section M.2.d.1.(a)(i) includes proscriptive criteria that should not be considered in the economic analysis:	

	Subsurface intakes shall not be determined to be economically infeasible solely because subsurface intakes may be more expensive than surface intakes. Subsurface intakes may be determined to be economically infeasible if the additional costs or lost profitability associated with subsurface intakes, as compared to surface intakes, would render the desalination facility not economically viable. According to the Transcript from the OPA final adoption hearing, all other feasibility issues are to be addressed in a CEQA analysis. But the tentative permit relies on an Addendum to the State Lands Commission SEIR that is narrowly limited to a "Modified Lease Project", and the 2010 FSEIR did not include the changed circumstances documented in the tentative permit, including adoption of the OPA.	
V.C	V.C. The Santa Ana Water Board has erroneously piecemealed its analysis of the environmental impacts posed by the Project. 1. The Santa Ana Water Board erred by refusing to assume and perform its Lead Agency obligations. By only doing an Addendum, the Santa Ana Water Board has unlawfully segmented the updated CEQA analysis for Poseidon's proposed ocean desalination Project. That legal error occurred because the Santa Ana Water Board misapprehended its required role under CEQA. Long after the City, as the original lead agency, completed all of its CEQA obligations, Poseidon applied for this Draft Permit that indisputably required a "subsequent or supplemental" EIR under the Public Resources Code before any other public agency could grant new discretionary approvals.289 The Santa Ana Water Board voluntarily stepped forward to make the next discretionary decision and, in doing so, to undertake the necessary CEQA update. In completing this work, however, the Santa Ana Water Board declined to become the substitute CEQA lead agency, claiming instead that it was acting only as a responsible agency and thus only required to prepare a partial EIR for those impacts and alternatives under its direct jurisdiction. The Santa Ana Water Board's refusal to step into the substitute CEQA lead agency role constituted a threshold legal error that precipitated the ultimate legal defect – an unlawful segmentation of the updated CEQA analysis. CEQA and its implementing regulations make clear that when the original lead agency has completed its statutory duties, but project changes or new information require additional environmental review, the next public agency to take discretionary action on the project shall step into the role of the "lead agency." Consistent with CEQA's basic framework discussed above, the lead agency role requires the preparation of a single updated EIR that adequately addresses all necessary facets of the project as whole; other "responsible agencies" thereafter must rely on the certified updated EIR in making their own approval decisions.	*Assertion 1: The Santa Ana Water Board erred by refusing to assume and perform its Lead Agency obligations* The Santa Ana Water Board appropriately relies on the 2010 FSEIR as augmented by the 2017 FSEIR and the Addendum. The Board may not assume the role of lead agency to prepare a subsequent EIR because the presumption of finality has not been overcome—none of the circumstances under Public Resources Code section 21166 apply here. CCKA asserts that the Santa Ana Water Board should assume the role of lead agency and prepare a subsequent EIR pursuant to Public Resources Code section 21166 and the related guidelines. Public Resources Code section 21166 provides the following: When an environmental impact report has been prepared for a project pursuant to this division, no subsequent or supplemental environmental impact report shall be required by the lead agency or by any responsible agency, unless one or more of the following events occurs:

	Here, the City completed its role as the original CEQA lead agency in 2010, when it certified a final EIR for the Project, and it has no other discretionary decision to make regarding the Project. Because changes and new information required an updated EIR, the Santa Ana Water Board agreed to prepare an Addendum, as a responsible agency, to evaluate the environmental impacts associated with the new linear diffuser. Despite being the only agency with a discretionary decision, the Santa Ana Water Board is only reviewing the diffuser modification – not the whole ocean desalination Project evaluated in the 2010 EIR. The Santa Ana Water Board ignored CEQA's mandatory command that the next public agency to make a discretionary decision "shall assume the role of the Lead Agency" when (i) additional CEQA review is necessary, (ii) the original lead agency has issued its final approval, and (iii) the statute of limitations for the original EIR has expired. Because all three of these conditions are satisfied here, the Santa Ana Water Board is required as a matter of law to assume lead agency status when it elected to take the next discretionary action. The mandatory nature of the Regional Board's legal obligation under section 15052(a) to step up and become the substitute lead agency is affirmed by CEQA Guideline section 15162(c), which echoes CEQA's guiding principle that a single agency must prepare a single EIR. Section 15162(c) provides that where the conditions for a subsequent EIR exist but the original lead agency's role in project approval is completed, "a subsequent EIR or negative declaration shall only be prepared by the public agency which grants the next discretionary approval for the project, if any." The regulation confirms that, under these circumstances, there is only a single updated CEQA document prepared for use by all agencies: "In this situation no other responsible agency shall grant an approval for the project until the subsequent EIR has been certified or subsequent negative declaration adopted." The Santa Ana Water Board's legal error in failing to step forward as the next CEQA lead agency would have little practical consequence had its "Addendum" updated the impacts and alternatives for the entire seawater desalination Project. But the Santa Ana Water Board hides behind the "responsible agency" label to avoid the preparation of a comprehensive EIR update for the ocean desalination Project, opting instead to limit its CEQA review to the diffuser modification. This approach violates CEQA's basic tenet that "[t]he term 'project' does not mean each separate governmental approval" but instead means "the activity which is being approved and which may be subject to several discretionary approvals by governmental agencies." The Santa Ana Water Board's threshold legal error thus constituted a prejudicial abuse of discretion, not harmless error.298 Its practical effect is that a single project may well be the subject of three or four different updated	(a) Substantial changes are proposed in the project which will require major revisions of the environmental impact report. (b) Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the environmental impact report. (c) New information, which was not known and could not have been known at the time the environmental impact report was certified as complete, becomes available. This CEQA provision creates a presumption of finality for certified EIRs and restricts an agency's ability to require further environmental review to instances when the listed circumstances apply. (See *Save Our Heritage Org. v. City of San Diego* (2018) 28 Cal.App.5th 656, 666; *Moss v. County of Humboldt* (2008) 162 Cal.App.4th 1041, 1050.) Further, "section 21166 comes into play precisely because in-depth review has already occurred, the time for challenging the sufficiency of the original EIR has long since expired, and the question is whether circumstances have *changed* enough to justify *repeating* a substantial portion of the process. Thus, while section 21151 is intended to create a 'low threshold requirement for preparation of an EIR' [citation], section [21166] indicates a quite different intent, namely, to restrict the powers of agencies 'by prohibiting [them] from requiring a subsequent or supplemental environmental impact report' unless the stated conditions are met." (*Moss v. County of Humboldt* (2008) 162 Cal.App.4th 1041, 1050, italics and alterations in the original.)

	EIRs – by the State Lands Commission, the Santa Ana Water Board, the Coastal Commission, and the Water District – and the subject of multiple CEQA challenges in the courts. That result is exactly what the Legislature intended to avoid in crafting the mandatory CEQA "lead agency" concept. 2. CEQA flatly prohibits piecemealing of project EIRs. In cleaving off the Addendum as a separate, discrete CEQA activity subject to a narrowly-drawn EIR, the Santa Ana Water Board acted contrary to decades of case law interpreting the statute and regulations. More than 40 years ago, the California Supreme Court described "the mandate of CEQA that environmental considerations do not become submerged by chopping a large project into many little ones – each with a minimal potential impact on the environment – which cumulatively may have disastrous consequences." It is now well-established in case law that "CEQA forbids 'piecemeal' review of the significant environmental impacts of a project" – a prohibition derived from CEQA section 21002.1(d)'s admonition that an EIR must consider both the individual and collective effects of all activities connected to a project. The California Supreme Court recently reiterated that the agency drafting an EIR cannot defer parts of the requisite environmental impacts and alternatives analysis to other agencies with discretion over those parts of the project. There, the City of Newport Beach prepared an EIR for a development proposal on a privately-owned ranch that contained important wildlife habitat within the coastal zone. Because Newport Beach does not have a certified local coastal program, the developer needed to obtain the requisite coastal development permit from the Coastal Commission, separate from any city approvals. As part of an earlier consent decree concerning other activity on the property, the Coastal Commission, the city, and the developer agreed that the Coastal Commission would undertake a separate analysis of whether the property contained "environmentally sensitive habitat areas" (ESHA) as defined and protected by the Coastal Act in a future proceeding. During the city's CEQA process, the Coastal Commission provided comments on the project's potential impacts to ESHA. The city, however, declined to evaluate ESHA in its EIR, disavowing any obligation to do so because ESHA findings were "within the discretion and authority of the Coastal Commission" as part of the later coastal development permitting process. In the subsequent judicial challenge, the Court of Appeal sided with the city, finding that because ESHA determinations are made by the Coastal Commission, the evaluation of ESHA was not a subject for consideration in the EIR. The California Supreme Court reversed, reviewing the city's procedural error de novo. The Court held that "the City did not make a good faith attempt to analyze project alternatives and mitigation measures in light of applicable Coastal Act requirements." To the contrary, the city "openly declared that it was omitting any	CCKA does not point to substantial changes to the project or to the project's circumstances that result in a new significant effect or make a previously identified significant effect substantially more severe. (See Pub. Resources Code, § 21166, subds. (a) & (b); CEQA Guidelines, § 15162, subd. (a)(1) &(2).) Nor, does CCKA point to new information of substantial importance that shows that there is a new significant effect, a substantial increase in the severity of a previously identified significant effect, a mitigation measure or alternative that was previously found to be not feasible is feasible and would substantially reduce one or more significant effects, or a different mitigation measure or alternative that would substantially reduce one or more significant effects. (See Pub. Resources Code, § 21166, subds. (a) & (b); CEQA Guidelines, § 15162, subd. (a)(1) &(2); see also responses to comments V.A to V.C.) The Discharger has proposed changes to the diffuser design that were not analyzed in the 2010 FSEIR or the 2017 FSEIR. The Santa Ana Water Board addressed these changes in the Addendum because none of the factors requiring a subsequent EIR under Public Resources Code section 21166 or CEQA Guidelines section 15162 were triggered. (See CEQA Guidelines, § 15164, subd. (a); see also Santa Ana Water Board Addendum.) In the 2017 FSEIR Litigation, CCKA also argued that the State Lands Commission should have assumed the role of lead agency and prepared a subsequent EIR. During the trial court proceeding on the merits of the petition, CCKA conceded that they were "not concerned with the name of the document" or "particularly concerned with the official designation of agencies." (*CCKA v. California State Lands*

	consideration of potential ESHA from the EIR, and deferring that analysis to a subsequent permitting process." This omission was particularly problematic because "[e]valuation of project alternatives and mitigation is '[t]he core of an EIR.'" In finding the EIR defective, the Court concluded: "The City's approach, if generally adopted, would permit lead agencies to perform truncated and siloed environmental review, leaving it to other responsible agencies to address related concerns seriatim." The very same flaws infect the Santa Ana Water Board's Addendum here. In particular, the Santa Ana Water Board expressly deferred the critical analysis of impacts and feasible alternatives related to Poseidon's proposed open-ocean intake system and declined to consider reasonably foreseeable changes in the Project's potable water delivery system. If this fragmented approach is allowed to stand, the result will be a mushrooming of separate environmental analyses by different agencies, each of which may result in separate judicial challenges. 3. The Santa Ana Water Board unlawfully deferred required analysis under CEQA to other agencies. The Santa Ana Water Board's Addendum explicitly and indisputably defers an important piece of the environmental impacts review and alternatives analysis to the Coastal Commission, precisely as Newport Beach did in Banning Ranch. As the Supreme Court held in Banning Ranch, this "fragmented presentation" of project impacts and alternatives does not comply with CEQA, which requires "a good faith effort to analyze project alternatives and mitigation measures in light of applicable [Desalination Regulation] requirements." In that case, Newport Beach "did provide a detailed biological analysis of project impacts," but the Court found that "however technically accurate the City's analysis might otherwise be, it fell short by failing to account for the Coastal Act's ESHA protections." Analogously here, the limited marine effects analysis included in the 2017 EIR did not and could not replace the CEQA requirement to evaluate impacts and feasible alternatives to comply with the new OPA, which are targeted directly at eliminating or reducing the consequences of open-ocean intake. The Addendum's omission of critical analyses violated CEQA. In enacting the statute, the Legislature declared that "it is the policy of the state that public agencies should not approve as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects" and that CEQA's mandatory review and disclosure procedures "are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects." An EIR must, therefore, evaluate potentially feasible alternatives to the project or its	*Commission* (Super. Ct. Sacramento County, 2019, No. 34-2017-8002736), p. 10, fn. 3.) Rather, CCKA was "concerned with the completion of [the 2017 FSEIR], and its ability to inform agencies in the public." (*CCKA v. California State Lands Commission* (Super. Ct. Sacramento County, 2019, No. 34-2017-8002736), p. 10, fn. 3.) The trial court ultimately upheld the State Lands Commission's decision to prepare a supplemental EIR—the 2017 FSEIR—rather than a subsequent EIR. CCKA's comment here continues to attack the validity of the 2017 FSEIR. In accordance with CEQA, the Board assumes the 2017 FSEIR complies with the provisions of CEQA and relies on the 2010 FSEIR as augmented by the 2017 FSEIR and the Addendum. See responses to comments V.A to V.C. *Assertion 2: CEQA flatly prohibits piecemealing of project EIRs.* As with the lead agency comment, the commenter continues to attack the validity of the 2017 FSEIR in this comment. CCKA also claimed that the State Lands Commission engaged in piecemealing by preparing the 2017 FSEIR. The trial court in the 2017 FSEIR Litigation was not persuaded by their argument and explained— > It is undisputed in this matter that an EIR was prepared in 2010 for the "Seawater Desalination Project at Huntington Beach." Thus, the Project has *already* been subjected to CEQA review, and the time to challenge the 2010 EIR has passed. The issue is not whether the

	location that are capable of lessening significant effects, even if those alternatives would impede attainment of project objectives to some degree or be more costly. Moreover, the EIR "must include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project." The Santa Ana Water Board's Addendum does not satisfy these minimal CEQA requirements. 4. The Santa Ana Water Board unlawfully refused to consider reasonably foreseeable project changes. The Santa Ana Water Board's Addendum also improperly exclude any consideration of a significant proposed change in the Project's treated water distribution system. As evidenced by the Santa Ana Water Board's January 8th, 2020 letter to Poseidon, the Santa Ana Water Board is well aware that OCWD is actively considering a new distribution option which includes the construction of new injection wells and connecting pipelines to the desalination facility. Indeed, a lengthy 2016 Water District report estimated the costs and possible layout of this new distribution system, and the District directed its staff to begin environmental review for this alternative. The October 2016 Interagency Permit Sequencing Agreement likewise reflected the agencies' shared knowledge of this significant project change, explaining that the Santa Ana Water Board "may want additional environmental information and analysis on the Orange County Water District (OCWD) groundwater injection system plans (should they involve desalinated water from the Huntington Beach Desalination Facility in new injection wells)." As noted above, this new alternative has potentially significant adverse impacts that were not considered in the 2010 EIR. CEQA requires that impacts from such a "reasonably foreseeable" significant change in the Project must be considered in the Supplemental EIR. "While foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can." The California Supreme Court has emphasized that "CEQA's demand for meaningful information 'is not satisfied by simply stating information will be provided in the future.'" Where uncertainty in long-term project planning exists, "an EIR may satisfy CEQA if it acknowledges the degree of uncertainty involved, discusses the reasonably foreseeable alternatives . . . and discloses the significant foreseeable environmental effects of each alternative, as well as mitigation measures to minimize each adverse impact." Despite the emergence of a reasonably foreseeable – indeed, quite probable – new option for the distribution portion of the Project, the Addendum declined to address and disclose its impacts, deferring any evaluation	Commission engaged in improper piecemealing with regard to the previously studied Project, but instead, is whether one or more of the following events has occurred: (d) Substantial changes are proposed in the project which will require major revisions of the environmental impact report. (e) Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the environmental impact report. (f) New information, which was not known and could not have been known at the time the environmental impact report was certified as complete, becomes available. (Pub. Res. Code § 21166, see also 14 CCR § 15162.) Or, in the alternative, whether it was appropriate for the Commission to prepare a supplement to the EIR on the basis that "only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation." (14 CCR § 15163.) The Commission's factual determination that such circumstances existed is subject to substantial evidence review. Ultimately, as noted earlier, it is the sufficiency of the environmental analysis contained in the documents that is at issue in this case. (CCKA v. California State Lands Commission (Super. Ct. Sacramento County, 2019, No. 34-2017-8002736), p. 12.) The same reasoning applies here and piecemealing is not an issue. The 2010 FSEIR retains informational value and

	to some future Water District process. But as the earlier 2010 EIR recognized, the water distribution system is an integral component of the Project which must be evaluated in the Project EIR. Without it, the desalination facility has no independent utility and could not proceed; that is, the desalination plant and the distribution system are interdependent components of a single project. The cases are clear that "when one activity is an integral part of another activity, the combined activities are within the scope of the same CEQA project." The Santa Ana Water Board's refusal to consider the impacts of a reasonably foreseeable option for the water distribution portion of the Project constituted unlawful project segmentation and a prejudicial abuse of discretion that will lead, inevitably, to multiple CEQA processes for a single project. CEQA's definition of a project as the "whole of an action" and not each separate government approval is "meant to 'ensure that a project proponent does not file separate environmental reports for the same project to different agencies'" and "prevents a proponent or a public agency from avoiding CEQA requirements by dividing a project into smaller components." The Santa Ana Water Board's deliberate segmentation of the Supplemental EIR wholly undermines these central CEQA principles. To comply with the State Water Board's new requirements, the Santa Ana Regional Water Board has a responsibility to minimize marine life mortality by evaluating the need for the project and determining that the location, technology, alternatives, and mitigation measures prevent unnecessary harm to marine life along California's coast. Unfortunately, this Draft Permit fails to correctly interpret the requirements of the OPA and relies on incomplete analysis and data provided primarily by the applicant and the project partner, OCWD, to inappropriately justify Poseidon's pre-selected site, size, and intake technology – all of which were selected by Poseidon nearly two decades ago and well before open ocean intakes were all- but outlawed in the Once-Through Cooling Policy in 2010, and the OPA was adopted in 2015. The Santa Ana Regional Water Board should deny this Draft Permit or go back and address the serious and illegal flaws before permitting the Poseidon – Huntington Beach Project.	includes the environmental analysis for the overall project. The State Lands Commission prepared the 2017 FSEIR to analyze the environmental effects of the changes to the intake and outtake structures that were proposed by the Discharger after the 2010 FSEIR was certified. The Discharger proposed these changes to comply with the Ocean Plan provisions that were adopted for desalination facilities, and the 2017 FSEIR considered the Ocean Plan provisions in its analysis of the changes. As required by CEQA, the Santa Ana Water Board assumes that the 2017 FSEIR complies with CEQA. (Pub. Resources Code, § 21167.3, subd. (b).) The Santa Ana Water Board's Addendum is the appropriate CEQA documentation to address the changes to the Discharger's proposed diffuser design because none of the factors that permit the preparation of a subsequent EIR apply. The Santa Ana Water Board did not "cleav[e] off the Addendum as a separate, discrete CEQA activity." *Assertion 3: The Santa Ana Water Board unlawfully deferred required analysis under CEQA to other agencies* See responses above in this comment and response to comment V.B. *Assertion 4: The Santa Ana Water Board unlawfully refused to consider reasonably foreseeable project changes* See response to comment V.B; Santa Ana Water Board Addendum.