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November 27, 2018

BY EMAIL

Hope A. Smythe
Executive Officer
Santa Ana Regional Water Quality Control Board
3737 Main Street, Suite 500
Riverside, CA 92501-3348
hope.smythe@waterboards.ca.gov

Re: Response to Residents for Responsible Desalination Comments on Water Code Section 13142.5(b) Determination - Appendix HHHHH

Dear Ms. Smythe:

Poseidon Resources (Surfside) LLC's ("Poseidon") writes to respond to Residents for Responsible Desalination's ("R4RD") October 15, 2018 comments on Poseidon's application for a California Water Code Section 13142.5(b) determination and renewal/reissuance of the National Pollutant Discharge Elimination System permit for the proposed Seawater Desalination Project at Huntington Beach ("HBDP"). Attachment A provides detailed responses to those comments. Nothing in the comments raises new information or arguments concerning the need for the HBDP, the feasibility of subsurface intakes, or any other considerations of the Santa Ana Regional Water Quality Control Board's ("Regional Board") analysis under Water Code section 13142.5(b).

Poseidon has submitted more than sufficient information confirming the HBDP's compliance with section III.M.2.b(2)¹ of the Water Quality Control Plan for Ocean Waters of California, including numerous reports and analyses demonstrating that the HBDP's amount of product water is consistent with the needs identified in water supply documents issued by regional and local water agencies. These documents—particularly Orange County Water District's ("OCWD") Groundwater Management Plan—specifically identify the HBDP as a planned future water supply, which is further supported by OCWD's approval in 2015, and again in 2018, of a term sheet agreement to purchase the facility's 56,000 acre feet per year capacity.

¹ "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."

LATHAM & WATKINS^{LLP}

Further, Poseidon has submitted extensive information and expert reports on the feasibility of subsurface intakes at the HBDP site. Since the City of Huntington Beach initiated environmental review for the HBDP, the infeasibility of subsurface intakes along the Huntington Beach coastline has been well-documented and confirmed by the City of Huntington Beach, the State Lands Commission, the Coastal Commission, and the Regional Board itself. Additional testing or data collection efforts are not necessary.

Although Poseidon has previously addressed the issues raised by R4RD in detail in its prior submittals to the Regional Board, we nonetheless address R4RD's specific comments in Attachment A. As demonstrated in Attachment A, the Regional Board has sufficient information in its record to make its Water Code section 13142.5(b) determination.

Poseidon appreciates staff's careful and continued consideration of the application, and we look forward to the Regional Board's release of the tentative order.

Sincerely,



Christopher W. Garrett
of LATHAM & WATKINS LLP



Attachment

cc: Teresita Sablan, Esq., State Water Resources Control Board
Kelly Huffman, Poseidon Water
Scott Maloni, Poseidon Water

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ATTACHMENT A

Attachment A to Appendix HHHHH

Responses to Residents for Responsible Desalination October 15, 2018 Letter

Comment R4RD-1

1. The Rule for Seawater Intakes

CCKA and Poseidon differ on their interpretation of the Ocean Plan amendment (OPA) regulations of seawater intakes for desalination facilities. We generally agree with the interpretation by CCKA. First, the OPA mandates the use of subsurface intakes unless the Applicant can show sufficient evidence to prove that subsurface intakes are not technically and/or economically feasible. Second, if that can be sufficiently proven, Poseidon must provide sufficient evidence to prove that the need for the product water is so definitive that a smaller facility could not be built at the proposed site or alternative sites using subsurface intakes. Poseidon has failed to do either in their application materials.

The OPA makes it clear that it is the Applicant’s duty to supply “sufficient information” for the Board to ensure a facility minimizes the intake and mortality of marine life through use of the best available site, design, technology and mitigation, including “additional studies and information if needed.” See III M 2(a)(1)¹ The OPA also states that the Regional Board must look at the four elements in the Porter-Cologne Act separately and in combination. See III.M.2(a)(2)

The disagreement between Poseidon and CCKA is central to the important question of whether or not subsurface intakes are “feasible.” We agree with the CCKA evidence that the studies and information submitted by Poseidon to date are “insufficient” to fully analyze the proposed project’s compliance with the OPA, and that “additional studies and information is needed.”

Response to Comment R4RD-1

R4RD’s understanding of the amendment to the Water Quality Control Plan for Ocean Waters of California (the “Desalination Amendment”) is plainly incorrect. The Desalination Amendment does not “mandate” subsurface intakes and the Desalination Amendment is not a “technology forcing” regulation as previously suggested by the California Coastkeeper Alliance (“CCKA”). Rather, the Desalination Amendment provides implementing regulations for California Water Code section 13142.5(b), which requires the “best available site, design, technology and mitigation

¹ OPA, III M 2(a)(1): “The owner or operator shall submit a request for a Water Code section 13142.5(b) determination to the appropriate regional water board as early as practicable. This request shall include **sufficient information** for the regional water board to conduct the analyses described below. **The regional water board in consultation with the State Water Board staff may require an owner or operator to provide additional studies or information if needed**, including any information necessary to identify and assess other potential sources of mortality to all forms of marine life. All studies and models are subject to the approval of the regional water board in consultation with State Water Board staff. The regional water board may require an owner or operator to hire a neutral third party entity to review studies and models and make recommendations to the regional water board.” [emphasis added]

measures feasible to minimize the intake and mortality of all forms of marine life.” (Water Code, § 13142.5(b) [emphasis added].) The Desalination Amendment’s definition of feasibility is much broader than solely “technical and/or economic” considerations as suggested by R4RD and also requires that a project be “accomplished in a successful manner in a reasonable period of time” taking into consideration environmental and social and factors in addition to technological and economic factors. (See Water Quality Control Plan for Ocean Waters of California (“Ocean Plan”), Appx. I, p. 54.) In this regard, for example, a subsurface intake could be found to be technologically and economically feasible but if the intake cannot be “successfully accomplished in a reasonable period of time” then the intake is not feasible per the Desalination Amendment.

R4RD’s convoluted interpretation of the Desalination Amendment conflates different provisions of the Desalination Amendment. Specifically, Chapter III.M.2.b.(2) provides guidance on how the Regional Water Quality Control Board (“Regional Board”) should evaluate the best available and feasible site for a proposed desalination facility. The Desalination Amendment states that the Regional Board shall:

[c]onsider 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.

In this case, the site of the proposed Huntington Beach Desalination Plant (“HBDP”) is in the City of Huntington Beach, located along the north-central coast of Orange County. The regional water agencies responsible for providing water to Orange County (*e.g.*, Orange County Water District (“OCWD”) and the Municipal Water District of Orange County (“MWDOC”)) identify the proposed HBDP as a planned future water supply, and as such, the site of the proposed HBDP complies with Desalination Amendment Chapter III.M.2.b.(2).

Separately, the Desalination Amendment’s requirement for evaluating the best available and feasible technology state 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.” The design capacity of the HBDP is not “in excess” of the identified need for desalinated water, and Poseidon is not exclusively arguing that slant well seawater intakes are infeasible because of the HBDP’s design capacity. Poseidon has submitted ample evidence to the Regional Board that enable the Regional Board to make a Water Code section 13142.5(b) compliance determination, just as the Regional Board did as part of its National Pollutant Discharge and Elimination System (“NPDES”) permit approval for the HBDP in 2012. In fact, in 2012, the Regional Board found that subsurface seawater intakes were infeasible, in part due to the finding that subsurface infiltration galleries and beach wells were environmentally inferior to an ocean intake.

Poseidon has submitted more than sufficient information to the Regional Board to support these findings. Among other things, Poseidon has submitted evidence confirming that: (1) subsurface intakes are infeasible in this location at *any* capacity; and (2) there is a local need for the HBDP’s desalinated water.

First, with respect to subsurface intakes, Poseidon has submitted numerous technical reports confirming that subsurface intakes, even with a reduced capacity (*e.g.*, a hybrid surface and subsurface intake), are infeasible for the HBDP due to site-specific factors. It is worth repeating that ***design capacity is not the determining factor in this intake feasibility analysis***. The evidence before the Regional Board concerning subsurface intake feasibility includes, but is not limited to:

- The ECO-M geophysics and geotechnical reports (September 2013 and June 2015, respectively) (Appxs. A1 and A2) evaluating characteristics of the off-shore basin;
- June 3, 2015 Geosyntec technical memorandum, *Revision and Sensitivity Analyses of Slant Well SSI Model Feasibility Assessment of Shoreline Subsurface Collectors* (Appx. A3),
- The City of Huntington Beach’s Final 2010 Supplemental Environmental Impact Report and appendices (including Appendices AA [Water Globe Consulting, *Evaluation of Alternative Desalination Plant Subsurface Intake Technologies* (March 2010)] and AB [PSOMAS, *Feasibility of Alternative Seawater Intakes for the Huntington Beach Seawater Desalination Project – Technical Memorandum* (May 2007)]) (Appx. D),
- The Phase 1 and Phase 2 Independent Scientific Technical Advisory Panel (“ISTAP”) reports (Appxs. F, G);
- September 2013 Geosyntec technical memorandum, *Feasibility Assessment of Shoreline Subsurface Collectors* (Appx. K);
- Three peer reviews of Geosyntec’s *Feasibility Assessment of Shoreline Subsurface Collectors* report (Appxs. L, L2, and L3)
- May 19, 2014 Scott Jenkins technical memorandum, *Oceanographic and Sediment Transport Analysis of Optimal Siting of a Seabed Infiltration Gallery at the Huntington Beach Desalination Facility* (Appx. M);
- November 18, 2016, Geosyntec technical memorandum, *Additional Sensitivity Analyses of Slant Well SSI Model Feasibility Modeling: Variation in the Location and Length of the Slant Wells Has Very Little Influence on the Portions of Source Water Pumped by the Slant Wells* (Appx. HHH) and update thereto (Appx. III); and
- July 24, 2017 Geosyntec technical memorandum, *Groundwater Modeling to Evaluate Feasibility of Subsurface Seawater Intakes in Bolsa, Sunset, and Alamitos Gaps* (Appx. QQQQ).

This evidence confirms that the flaws with subsurface intakes “are largely independent of the size of the intake, and therefore the size of proposed plant. Therefore, the reduction of the size of the intake/production capacity of the desalination facility will not improve their viability.” (Appx. D [Water Globe Consulting Technical Memorandum].) In other words, “[r]eduction of the Huntington Beach project size below its proposed capacity of 50 million gallons per day (MGD) is not expected to improve subsurface intake viability because most of the source water quality and environmental constraints which render the project infeasible would not be eliminated or

diminished significantly with the reduction of the project size.” (Appx. D [PSOMAS report]; see also Appx. F [ISTAP Phase 1 report], pp. 17, 63-64; Appx. G [ISTAP Phase 2 report], pp. 21, 39.)

With respect to the need for the HBDP’s desalinated water, Poseidon has submitted numerous reports and analyses demonstrating that the HBDP’s amount of product water is consistent with the needs identified in applicable water supply documents, including OCWD’s 2015 Groundwater Management Plan and MWDOC’s 2015 Urban Water Management Plan (“UWMP”).

The evidence before the Regional Board concerning project need includes, but is not limited to:

- MWDOC 2010 Regional UWMP (Appx. N);
- OCWD Long Term Facilities Plan 2014 Update (Appx. O);
- White papers summarizing the local need for 50 million gallons per day (“MGD”) of desalinated ocean water (Appxs. EE, LL1, LL2, and NN);
- 2015 MWDOC UWMP (Appx. FF);
- OCWD Groundwater Management Plan 2015 Update (Appx. GG);
- 2015 Metropolitan Water District of Southern California 2015 Integrated Resources Plan (Appx. KK);
- Correspondence or documents from OCWD confirming its intent to purchase 56,000 acre feet per year (“afy”) from the HBDP (Appxs. P, P2, P3, P4, P5, MM); and
- Correspondence from MWDOC confirming that the 56,000 afy capacity of the HBDP is identified as a planned future water supply project in MWDOC’s 2015 UWMP (Appx. WW).

This clearly demonstrates a need for the HBDP’s product water, which has been identified by numerous water agencies.

In sum, Poseidon has submitted more than “sufficient information” for the Regional Board to make a Water Code section 13142.5(b) determination, including information concerning the feasibility of subsurface intakes at multiple scales and information confirming the identified need for the HBDP’s desalinated water.

Comment R4RD-2

It is critical to first look at the mandate to use subsurface intakes. Section III.M.2(d)(1)(a) clearly 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.** [emphasis added].

Clearly, subsurface intakes are the best technology available to minimize the intake and mortality of marine life and are therefore mandatory unless proven to be “not feasible.”

Response to Comment R4RD-2

Please refer to Response to Comment R4RD-1 concerning the evidence that Poseidon has submitted to the Regional Board demonstrating that subsurface intakes are infeasible at the HBDP site, at any capacity.

The Desalination Amendment provides that subsurface intakes are the preferred seawater intake method. However, if subsurface intakes are not feasible, the Regional Board “*shall require that surface water intakes be screened*” with a 1 mm or smaller size screen. (Ocean Plan, Ch. III.M.2.d.(1)(c)(i) [emphasis added].) Here, subsurface intakes are not technically and/or economically feasible for the reasons described in the numerous technical reports that Poseidon has submitted to the Regional Board. Therefore, Poseidon has proposed a screened intake, in compliance with the Desalination Amendment.

Comment R4RD-3

However, Section 2(d)(1)(a) also makes it clear that a design capacity greater than the “need” shall not be used to declare subsurface intakes not feasible.²

Section III.M.2(b)(2) defines what evidence is used to prove the “need”:

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.

It is clear that an applicant must show the “need” for the proposed volume of product water, and that the purported “need” is consistent with an “applicable” urban water management plan (UWMP). That is, the UWMP, in and of itself, does not establish the “need.” The applicant must prove the need and show that proof is “consistent” with an UWMP. Further, alternative documents are only allowed where an UWMP is not “available.” In this case, while Poseidon, and their partner agency OCWD, have not decided how the water will be distributed, it is clear that the distribution will be within the service area of the Municipal Water District of Orange County (MWDOC). Therefore, MWDOC has an “applicable”

² Oddly, this sub-section discusses “design” capacity by referring to text in the sub-section on “site.”

and “available” UWMP. A sufficiently defined “need” must be submitted by Poseidon, as well as a showing the need is consistent with the MWDOC UWMP.

Response to Comment R4RD-3

See Response to Comment R4RD-1 concerning the evidence that Poseidon has submitted to the Regional Board demonstrating that subsurface intakes are infeasible at the HBDP site, at any capacity. As described therein, *design capacity is not the determining factor in the intake feasibility analysis for the HBDP*. Rather, the flaws with subsurface intakes “are largely independent of the size of the intake, and therefore the size of proposed plant. Therefore, the reduction of the size of the intake/production capacity of the desalination facility will not improve their viability.” (Appx. D [Water Globe Consulting Technical Memorandum].) In other words, “[r]eduction of the Huntington Beach project size below its proposed capacity of 50 million gallons per day (MGD) is not expected to improve subsurface intake viability because most of the source water quality and environmental constraints which render the project infeasible would not be eliminated or diminished significantly with the reduction of the project size.” (Appx. D [PSOMAS report].)

With respect to the evidence that the Desalination Amendment requires concerning need, R4RD’s interpretation of the Desalination Amendment is flawed and was rejected by the State Water Resources Control Board (“State Board”) during the adoption process for the Desalination Amendment. R4RD appears to allege that a project applicant and the Regional Board must “go behind” the need identified in water planning documents to determine whether a need for water expressed in those plans actually exists. As the State Board recognized, such analysis is beyond the purview of the State Board.

As the State Board explained in responses to comments on its Substitute Environmental Document (“SED”) for the Desalination Amendment, “[u]rban water management planning documents are best suited to identify the need for desalinated water.” (SED, p. J-153.) Likewise, the State Board explained: “[T]he State Board believes that local water suppliers are best positioned to determine the ‘loading order’ of their water supplies based on site specific conditions and regional water supply planning.” (*Id.*, p. H-9.) The State Board also clarified that the intent of Chapter III.M.2(b)(2) is to “ensure that the water demand assumptions made as part of [an applicant’s] feasibility studies . . . *be consistent with* the water demand assumptions in [water agencies’] planning documents”—not to require the Regional Board to second-guess those assumptions. (*Id.*, p. H-13 [emphasis added].)

With respect to UWMPs, Water Code section 10631(h) requires that UWMPs identify the specific projects and water volumes that water districts expect to rely on to serve an area’s water needs under various normal and drought scenarios. The projects identified in an UWMP to serve these water needs reflect a degree of commitment, planning, and engineering by a water district that Regional Boards can rely upon. Therefore, there is no need for the Regional Board to “second guess” the determinations made in an UWMP, and doing so would be outside of the Regional Board’s authority and expertise.

The Desalination Amendment also recognizes that, in some circumstances, water supply planning documents other than an UWMP may be relevant for determining project need. This is one of these situations. As described in Appendix EE, OCWD is the primary water agency involved in the HBDP and is the manager of the Orange County Groundwater Basin. Therefore, the appropriate planning document for OCWD is its 2015 Groundwater Management Plan (Appx. GG), which identified a local and regional need for up to 56,000 afy of desalinated water from the HBDP.

Accordingly, it is appropriate to look to both MWDOC's UWMP and OCWD's Groundwater Management Plan for determining the need for the HBDP's desalinated water. As described at length in Poseidon's previous submittals, both documents identify the HBDP as a potential planned water supply project for up to 56,000 afy. Therefore, the "identified need for desalinated water" is "consistent" with "an applicable adopted urban water management plan" and "other water planning documents," in accordance with Chapter III.M.2(b)(2). Furthermore, OCWD has approved a water purchase agreement term sheet with Poseidon, first in 2015 and again in 2018, memorializing OCWD's intent to obtain water from the HBDP as identified in the 2015 Groundwater Management Plan.

Comment R4RD-4

Section III.M.2(d) defines the "best available technology" to minimize intake and mortality of marine life as subsurface intakes. This section also defines the factors to consider when determining whether subsurface intakes are "not feasible":

...[g]eotechnical 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.

Below we generally refer to these factors for consideration as "technical feasibility" and "economic feasibility."

Response to Comment R4RD-4

The Desalination Amendment provides that subsurface intakes are the preferred seawater intake method. However, if subsurface intakes are not feasible, the Regional Board "***shall require that surface water intakes be screened***" with a 1 mm or smaller size screen. (Ocean Plan, Ch. III.M.2.d.(1)(c)(i) [emphasis added].) Here, subsurface intakes are not technically and/or economically feasible for the reasons described in the numerous technical reports that Poseidon has submitted to the Regional Board. Therefore, Poseidon has proposed a screened intake, in compliance with the Desalination Amendment.

Comment R4RD-5

In connection to the “need”, Section III.M.2(d)(1)(a)(ii) states:

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 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 meet the identified need for desalinated water as described in chapter III.M.2.b.(2). [emphasis added]

That is, if the Regional Board finds that subsurface intakes are not feasible for the proposed intake volume, the Regional Board is mandated to consider a reasonable range of alternative design capacities that would make subsurface intakes feasible. Further, this may include a combination of surface and subsurface intakes to meet the “need” identified in III.M.2(b)(2). In brief, the Applicant must show a “need” for the volume of product water that is consistent with an applicable UWMP. The identified “need” must justify an exception to the otherwise mandated use of the best available technology – subsurface intakes. If the evidence submitted is not sufficient to show a definitive “need”, the Regional Board must fully consider whether subsurface intakes would be feasible for a reasonable range of alternative design capacities.

Response to Comment R4RD-5

See Response to Comment R4RD-1 concerning the evidence that Poseidon has submitted to the Regional Board demonstrating that subsurface intakes are infeasible at the HBDP site, at any capacity. As described therein, *design capacity is not the determining factor in the intake feasibility analysis for the HBDP*. Rather, the flaws with subsurface intakes “are largely independent of the size of the intake, and therefore the size of proposed plant. Therefore, the reduction of the size of the intake/production capacity of the desalination facility will not improve their viability.” (Appx. D [Water Globe Consulting Technical Memorandum].) In other words, “[r]eduction of the Huntington Beach project size below its proposed capacity of 50 million gallons per day (MGD) is not expected to improve subsurface intake viability because most of the source water quality and environmental constraints which render the project infeasible would not be eliminated or diminished significantly with the reduction of the project size.” (Appx. D [PSOMAS report].)

See Response to Comment R4RD-3 concerning the need for desalinated water. As described therein, both MWDOC’s 2015 UWMP and OCWD’s Groundwater Management Plan have identified a need for the HBDP’s 56,000 afy of desalinated water.

Comment R4RD-6

Finally, Section 2(e) states:

Mitigation for the purposes of this section is the replacement of all forms of marine life* or habitat that is lost due to the construction and operation of a desalination facility* **after minimizing intake and mortality of all forms of marine life* through best available site, design, and technology.**

As implied in the CCKA letter, this provision clearly states that, at least in regard to the proposed seawater intake, mitigation is a separate consideration **after** best available site, design and technology have been implemented. Because Poseidon has failed to supply sufficient information and studies to prove subsurface intakes are not feasible, we do not discuss proper mitigation in our comments below.

Response to Comment R4RD-6

See Response to Comment R4RD-1 concerning the evidence that Poseidon has submitted to the Regional Board demonstrating that subsurface intakes are infeasible at the HBDP site, at any capacity.

With respect to the Regional Board's consideration of mitigation, the Regional Board's analysis must be consistent with Water Code section 13142.5(b). Water Code section 13142.5(b) requires that desalination facilities utilize "best available site, design, technology and mitigation measures feasible . . . to minimize the intake and mortality of all forms of marine life." Thus, the facility must use the relevant measures *in combination* to minimize both intake and mortality. (See *Surfrider Foundation v. California Regional Water Quality Control Board* (2012) 211 Cal.App.4th 557, 576.)

Comment R4RD-7

2. "Need" for the Product Water

CCKA argues in their letter that Poseidon's submittals to the Regional Board are not sufficient proof of "need" for a 50mgd seawater desalination facility. CCKA's attachments included a study by James Fryer -- a thorough analysis of historical and current UWMPs in Orange County and critique of the purported "need" for a 50mgd seawater desalination facility in the area.

In large part, Poseidon's response concludes that the findings in the "Fryer Report" are not germane because the proposed seawater desalination³:

- a. Is listed in OCWD planning documents that are consistent with MWDOC's UWMP, which, in and of itself complies with the OPA requirements;

³ See Poseidon Attachment CCCCC: Executive Summary

- b. Is not intended to meet future demand, but intended to offset imported water; and,
- c. CCKA is simply advocating for preferential consideration of supply options they consider superior – and this “loading order” was dismissed in the final OPA.

As explained in more detail below, if Poseidon’s rebuttal points are accepted by the Regional Board, the required proof of “need” before making an exception to the mandate to use the best technology available (subsurface intakes) will be rendered all but meaningless.

For example, below are our comments on the 3 objections Poseidon raised in the rebuttal to the CCKA submittals, taken from their attached document “Attachment CCCCC.”

Response to Comment R4RD-7

See Responses to Comment R4RD-1 concerning the correct interpretation and application of the Desalination Amendment and R4RD-3 concerning the need for desalinated water. As described therein, both MWDOC’s 2015 UWMP and OCWD’s Groundwater Management Plan have identified a need for the HBDP’s 56,000 afy of desalinated water. Therefore, the “identified need for desalinated water” is “consistent” with “an applicable adopted urban water management plan” and “other water planning documents,” in accordance with Chapter III.M.2(b)(2). As described in Response to Comment R4RD-3, the Regional Board is not required to “second-guess” the determinations made in these water planning documents.

Further, as described in Response to Comment R4RD-1, the identified need for water is not a determining factor in the numerous technical reports concluding that subsurface intakes are infeasible for the HBDP. Rather, the flaws with subsurface intakes “are largely independent of the size of the intake, and therefore the size of proposed plant. Therefore, the reduction of the size of the intake/production capacity of the desalination facility will not improve their viability.” (Appx. D [Water Globe Consulting Technical Memorandum].) In other words, “[r]eduction of the Huntington Beach project size below its proposed capacity of 50 million gallons per day (MGD) is not expected to improve subsurface intake viability because most of the source water quality and environmental constraints which render the project infeasible would not be eliminated or diminished significantly with the reduction of the project size.” (Appx. D [PSOMAS report].)

Comment R4RD-8

a. **Poseidon states:** *“The Orange County Water District’s updated future demand projections within its service territory are 447,000-acre feet per year in 2035, which is consistent with the demand projections in the Municipal Water District of Orange County’s (“MWDOC”) 2015 Urban Water Management Plan (“UWMP”). The Regional Board can make findings in OPA chapter III.M.2.b.(2) because the Project is identified in applicable water planning documents...”* See CCCCC at pg. 8-9

Poseidon’s statement misinterprets the requirements in the OPA. It is a gross oversimplification and misstatement to say that because a project is “identified” in applicable

water planning documents, the project proponent has proven a “need” for the facility. That interpretation would mean that OPA compliance would simply require project proponents that also prepare UWMPs to simply “identify” a seawater desalination facility in their plans and the Regional Board would not be required to scrutinize the “need” prior to allowing an exception to the rule mandating subsurface intakes. That would be “an exception to the rule that swallows the rule.”

Response to Comment R4RD-8

See Response to Comment R4RD-3 concerning the need for desalinated water. As described therein, both MWDOC’s 2015 UWMP and OCWD’s Groundwater Management Plan have identified a need for the HBDP’s 56,000 afy of desalinated water. Therefore, the “identified need for desalinated water” is “consistent” with “an applicable adopted urban water management plan” and “other water planning documents,” in accordance with Ocean Plan Chapter III.M.2(b)(2). Furthermore, OCWD and Poseidon have executed a water purchase agreement term sheet, in 2015 and again in 2018, demonstrating OCWD’s ongoing intent to pursue the HBDP as a planned future water supply project in its long-term planning document. As described in Response to Comment R4RD-3, the Regional Board is not required to “second-guess” the determinations made in these water planning documents.

Comment R4RD-9

First, the cumulative demand of 447,000 acre-feet per year is not an identified “need” for the proposed project. OCWD, Poseidon’s project partner, may project demands for 447,000 acre-feet of water in 2035, but there are numerous sources of water to meet that demand. And Poseidon fails to identify those alternative sources and the remaining “need” for an additional 56,000 ac-ft/yr.

Response to Comment R4RD-9

See Response to Comment R4RD-3 concerning the need for desalinated water. As described therein, both MWDOC’s 2015 UWMP and OCWD’s Groundwater Management Plan have identified a need for the HBDP’s 56,000 acre feet per year of desalinated water. Therefore, the “identified need for desalinated water” is “consistent” with “an applicable adopted urban water management plan” and “other water planning documents,” in accordance with Ocean Plan Chapter III.M.2(b)(2). As described in Response to Comment R4RD-3, the Regional Board is not required to “second-guess” the determinations made in these water planning documents.

With respect to OCWD’s water supply planning, as described in Appendix EE, OCWD is the primary water agency involved in the HBDP. As the manager of the Orange County Groundwater Basin, the appropriate planning document for OCWD is the 2015 Ground Water Management Plan which identified a local and regional need for the 56,000 afy of desalinated water. This need is based on three key factors: (1) limited imported water supplies; (2) declining Santa Ana River flows; and (3) increased demand for water. The Groundwater Management Plan explicitly identifies the HBDP as a planned source of 56,000 afy in the next five year period of 2015 to 2020.

The Groundwater Management Plan’s assumptions regarding need are echoed in OCWD’s 2014 Long-Term Facilities Plan. Additionally, each of the local retail agencies that could receive HBDP

water has an adopted UWMP that includes a description of HBDP as one of the potential seawater desalination projects in the region. On a regional basis, MWDOC's UWMP identifies HBDP as one of three potential regional desalination projects, and its 2015 draft UWMP specifically identifies HBDP as a planned water supply project for 56,000 afy. Similarly, the Metropolitan Water District of Southern California's 2015 Integrated Water Resources Plan update identifies 238,000 acre-feet from the local supply reliability target, which is consistent with the HBDP. The Integrated Water Management Plans in Orange County support the importance of enhancing local water supplies and reducing reliance on imported water. Finally, the State's California Water Action Plan, California Water Plan, and Delta Reform Act all also include policy objectives that emphasize increased regional self-reliance and reduced dependence on imported water. By any measure, the HBDP's 56,000 afy design capacity is therefore consistent with, and in furtherance of, existing planning documents at multiple local, regional, and state levels of water planning.

R4RD's suggestion that the Regional Board must first look to water sources other than desalination to meet local or regional needs before desalination may be approved was expressly rejected by the State Board, who confirmed that such analysis is best left to the water planning agencies:

It is up to water providers to evaluate various supply options and costs and impacts of each to make informed decisions about future supplies. ***Selecting water supply alternatives at a local, regional, or statewide level is not the State Water Board's role and the State Water Board does not propose to prioritize or rank water supply options on a statewide level.***

(SED, p. H-7 [emphasis added].) Accordingly, once a water planning agency has determined that there is a need for new water supplies, as MWDOC and OCWD have determined here, the water agency has the discretion to determine how to best develop or procure water supplies to meet the identified need.

Further, to the extent that R4RD is arguing that MWDOC or OCWD have not taken into account other future water programs in their need calculations, that assertion is patently incorrect. As described in MWDOC's July 7, 2016 letter to the Regional Board:

[MWDOC's 2015 UWMP Update] finds that MWDOC's service area total direct and indirect demands in FY 2014-2015 were 499,120 AF, which was met by approximately 225,000 acre feet (45%) of imported water. Under normal condition, total direct and indirect water demands are projected to increase to 515,425 AF by the year 2040 with Orange County still relying on imported water for over 200,000 AY per year without the development of NEW supplies (this assumes large increases in water use efficiency continue and that OCWD's Groundwater Replenishment System is expanded to 130,000 acre-feet per year).

(Appx. WW.) OCWD's need determinations also considered other water supply options. (See Appx. O, pp. 3-26 to 3-29.) Accordingly, and as described in Appendix NN, MWDOC's and

OCWD's determinations of the need for the HBDP as a future water supply source was made in a process that fully included other water sources, as well as conservation.

Comment R4RD-10

Second, Poseidon compounds the error by implying that because OCWD's projected cumulative demand is consistent with MWDOC's UWMP, it proves the "need" is consistent with an adopted UWMP. That is incorrect – neither the OCWD cumulative demand projection nor the MWDOC UWMP provide a definitive "need" for the proposed Poseidon 56,000 ac/ft/yr seawater desalination facility.

Response to Comment R4RD-10

See Responses to Comments R4RD-3 and R4RD-9 concerning the need for the HBDP's desalinated water. As described therein, both MWDOC's 2015 UWMP and OCWD's Groundwater Management Plan have identified a need for the HBDP's 56,000 ac/ft/yr of desalinated water. Therefore, the "identified need for desalinated water" is "consistent" with "an applicable adopted urban water management plan" and "other water planning documents," in accordance with Ocean Plan Chapter III.M.2(b)(2). As described in Response to Comment R4RD-3, the Regional Board is not required to "second-guess" the determinations made in these water planning documents.

Comment R4RD-11

Poseidon also complains that the Fryer Report is outdated. Regardless of the date the Fryer study was conducted, and any changes in demand projections since, the Fryer Report provides detailed data and analyses the Regional Board must consider when determining the purported "need" for a 56,000 ac/ft/yr facility. The Fryer Report is most certainly "germane" and "relevant" to critique the assumptions and calculations used to identify a "need" for the facility's design capacity – in fact that analysis of need is clearly required in the OPA.

Response to Comment R4RD-11

See Responses to Comments R4RD-3 and R4RD-9 concerning the need for the HBDP's desalinated water. As described therein, both MWDOC's 2015 UWMP and OCWD's Groundwater Management Plan have identified a need for the HBDP's 56,000 ac/ft/yr of desalinated water. Therefore, the "identified need for desalinated water" is "consistent" with "an applicable adopted urban water management plan" and "other water planning documents," in accordance with Ocean Plan Chapter III.M.2(b)(2).

The Desalination Amendment requires the Regional Board to consider the need identified in UWMPs and other water planning documents. As described in Response to Comment R4RD-3, the Regional Board is not required to "second-guess" the determinations made in these water planning documents.

Comment R4RD-12

It is critical to keep in mind that the OPA clearly states that subsurface intakes are the mandatory intake technology unless the Applicant can prove a “need” that is “consistent” with an UWMP. If water agencies are allowed to state a “need” without any analysis of alternatives to meet projected demand and/or simply listing desalination as an option in an UWMP, the exception to the mandate to use subsurface intakes would be completely left to the project proponent’s discretion. Clearly, challenges to the purported “need”, as those in the Fryer Report, are relevant information that must be considered by the Regional Board.

Response to Comment R4RD-12

See Responses to Comments R4RD-3 and R4RD-9 concerning the need for the HBDP’s desalinated water. As described therein, both MWDOC’s 2015 UWMP and OCWD’s Groundwater Management Plan have identified a need for the HBDP’s 56,000 ac-ft of desalinated water. Therefore, the “identified need for desalinated water” is “consistent” with “an applicable adopted urban water management plan” and “other water planning documents,” in accordance with Ocean Plan Chapter III.M.2(b)(2).

The Desalination Amendment requires the Regional Board to consider the need identified in UWMPs and other water planning documents. As described in Response to Comment R4RD-3, the Regional Board is not required to “second-guess” the determinations made in these water planning documents.

Furthermore, R4RD’s reading of the Desalination Amendment is incorrect. The Desalination Amendment does not, and cannot, “mandate” technologies that are not feasible.⁴ Please refer to Response to Comment R4RD-1 concerning the evidence that Poseidon has submitted to the Regional Board demonstrating that subsurface intakes are infeasible at the HBDP site, at any capacity.

Comment R4RD-13

b. Poseidon states: *“Desalinated water will replace on a one-for-one basis the need to import water into Orange County. As such, desalinated water is not serving planned future growth in water demand, and thus various projections – high or low – are irrelevant.” See CCCCC at pg. 8 [emphasis added]. Poseidon admits, “[a]bsent the Project, the OCWD’s service territory alone will need to import over 100,000-acre feet of water per year (twice the Project’s capacity). Id.*

While reducing demand for imported water is arguably a laudable desire, it is not a defined “need” for a 50mgd facility. That statement begs the question: If the proposal is to eliminate imported water in the region, why isn’t the proposal for a 100,000 acre-feet of water per year (ac-ft/yr)? Or, alternatively, if the project is only meant to partially replace imported

⁴ See *Surfrider Foundation v. Cal. Regional Water Quality Control Bd.* (2012) 211 Cal.App.4th 557, 576-577, 581-584.

water, why not propose a 20,000 ac-ft/yr project – or 30,000 or 40,000? To comply with the mandates in the OPA, the project should only replace the amount of imported water by the amount of water that can be produced by a desalination facility using subsurface intakes for source water.

Response to Comment R4RD-13

See Responses to Comments R4RD-3 and R4RD-9 concerning the need for the HBDP's desalinated water. As described therein, both MWDOC's 2015 UWMP and OCWD's Groundwater Management Plan have identified a need for the HBDP's 56,000 ac-ft of desalinated water. Therefore, the "identified need for desalinated water" is "consistent" with "an applicable adopted urban water management plan" and "other water planning documents," in accordance with Ocean Plan Chapter III.M.2(b)(2).

Concerning the use of desalinated water to reduce reliance on imported water, such determinations are expressly left to the discretion of water planning agencies. As the State Board explained:

It is up to water providers to evaluate various supply options and costs and impacts of each to make informed decisions about future supplies. *Selecting water supply alternatives at a local, regional, or statewide level is not the State Water Board's role and the State Water Board does not propose to prioritize or rank water supply options on a statewide level.*

(SED, p. H-7 [emphasis added].) In addition, reducing reliance on imported water advances important State planning goals. Specifically, the State's California Water Action Plan, California Water Plan, and Delta Reform Act all include policy objectives that emphasize increased regional self-reliance and reduced dependence on imported water.

Comment R4RD-14

Poseidon undercuts its own argument that there is a "need" for the facility that is consistent with an adopted UWMP by stating, "...desalination is not serving planned future growth in water demand." In other words, Poseidon is not defining a "need" for the water to meet projected demands, it is defining a "desire" to replace one source of water with another.

Response to Comment R4RD-14

See Response to Comment R4RD-13 concerning the need for HBDP water to reduce reliance on imported water supplies.

Comment R4RD-15

c. **Poseidon states:** *"Finally, the State Water Board expressly rejected the notion that there should be a water resource preference, or 'loading order', when determining a proposed desalination project's compliance with the OPA."* See CCCCC at pg. 9 Poseidon then goes on to cite a letter from OCWD to the State Lands Commission which states: *"OCWD's letter included the following, '[Coastkeeper] indicates that if the proposed*

Metropolitan Water District (MWD) Carson Indirect Potable Reuse project is completed and provides OCWD with water, that the Poseidon project would not be needed. OCWD believes this statement is incorrect. At this time it is OCWD's understanding that if recycled water from the MWD Carson project is received by the District it would replace the 65,000-acre-feet per year of untreated MWD water that is currently annually purchased by OCWD. Additionally this comment by Orange County Coastkeeper does not account for the primary purpose of the proposed Poseidon project which is too (sic) reduce the areas need for imported water.” Id.

Poseidon and its partner OCWD argue that the planned Carson plant would “replace 65,000 acre feet per year of untreated MWD water that is currently annually purchased by OCWD...” Importantly, that water OCWD annually purchases from MWD is “imported water.” But OCWD simultaneously argues this alternative source of water “does not account for the primary purpose of the proposed Poseidon project which is too (sic) reduce the areas need for imported water.” That is clearly a contradictory statement. Any purported “need” would be better served by the product water from the planned Carson plant, and it would also better serve OCWD’s “desire” to reduce the volume of imported water they purchase.

Response to Comment R4RD-15

See Response to Comment R4RD-13 concerning the need for HBDP water to reduce reliance on imported water supplies. Further, OCWD’s letter speaks for itself—OCWD has identified a need for both the Carson Indirect Potable Reuse Project and the HBDP, which is critical to reducing OCWD’s reliance on imported water and improving local water reliability.

Comment R4RD-16

Further, while the State Board may have rejected a strict “loading order”, that does not mean that proving a “need” for the facility does not require an analysis by the Regional Board that includes alternatives to meet the projected demand in the UWMP. The Regional Board would not be stepping into the shoes of the water agency by requiring a thorough documentation of need – nor would the Regional Board be imposing a “loading order.” The regulations mandate using subsurface intakes unless there is sufficient evidence of a “need” that would make subsurface intakes “not feasible.” In fact, if the desalination project proposes to utilize subsurface intakes, there is no requirement for the Regional Board to consider “need” or consistency with an UWMP. It is the Applicant’s choice to request an exception to using the best technology available to minimize intake and mortality (subsurface intakes). But that choice by the Applicant triggers the Regional Board’s mandate to thoroughly consider “need” and the documented need’s consistency with an adopted UWMP – consequently it is the applicant’s duty to prove the “need.”

Response to Comment R4RD-16

See Responses to Comments R4RD-3, R4RD-9, and R4RD-13 concerning the need for HBDP desalinated water and the State Board’s determination not to prioritize or rank water supply alternatives.

Please also refer to Response to Comment R4RD-1 concerning the evidence that Poseidon has submitted to the Regional Board demonstrating that subsurface intakes are infeasible at the HBDP site, at any capacity.

Comment R4RD-17

Poseidon protests too much. We don't see anything in the CCKA letter, or the Fryer Report, that indicates the Regional Board must consider a "water resource preference" or a "loading order." The CCKA argument is much simpler: Poseidon has not sufficiently shown a need for a 50mgd desalination facility, as mandated in the OPA, before the Regional Board can grant an exception to the rule mandating subsurface intakes. OCWD has the discretion to add whatever supply of water it chooses to its portfolio, including seawater desalination. However, OCWD does not have the discretion to violate water code Section 13142.5(b) nor the implementing regulations included in the OPA that mandate the use of subsurface intakes – the Regional Board has the duty to fully enforce those laws.

Response to Comment R4RD-17

See Responses to Comments R4RD-3, R4RD-9, and R4RD-13 concerning the need for HBDP desalinated water and the State Board's determination not to prioritize or rank water supply alternatives. As described therein, it is appropriate to look to both MWDOC's UWMP and OCWD's Groundwater Management Plan for determining the need for the HBDP's desalinated water. As described at length in Poseidon's previous submittals, both documents identify the HBDP as a potential planned water supply project for up to 56,000 afy. Therefore, the "identified need for desalinated water" is "consistent" with "an applicable adopted urban water management plan" and "other water planning documents," in accordance with Ocean Plan Chapter III.M.2(b)(2).

Please also refer to Response to Comment R4RD-1 concerning the evidence that Poseidon has submitted to the Regional Board demonstrating that subsurface intakes are infeasible at the HBDP site, at any capacity.

Comment R4RD-18

Finally, we would like to put this "need" discussion into an historical perspective. Poseidon has been arguing there is a need for a 50mgd plant in Orange County since the year 2000, with the first permits and CEQA documents completed in 2005. Their inability to complete the permitting process and begin construction resulted in their permit expiring in 2010. Since 2000 much has changed, including the adoption of the OPA. But the documentation of "need" has also changed. As illustrated in the Fryer Report, since 2000, demand for water in the region has remained relatively stable, local recycled water from the Groundwater Replenishment System has been added to the supply portfolio and is soon to be at 130mgd, and the Carson project will add an additional 65mgd of local supply. But with all this, Poseidon's argument for "need" has stayed exactly the same. History shows us Poseidon was wrong then and it is wrong now.

Response to Comment R4RD-18

As an initial matter, the HBDP does not have a permit that expired in 2010. The HBDP is currently undergoing state permitting, including the recent approval of a lease amendment by the California State Lands Commission (“SLC”). The HBDP is also seeking approvals from the Regional Board and the California Coastal Commission.

In addition, the projects objectives have remained unchanged since the HBDP was initially introduced in the early 2000s. These objectives are documented in the City of Huntington Beach’s 2010 FSEIR, and include satisfying an identified need for water and providing a local, climate independent source of water that reduces Orange County’s reliance on imported water. (See Appx. D [2010 CEQA Findings], pp. 80-82 [“The water produced by the project is an important drought-proof, renewable supply that will enhance the overall portfolio of water resources available to Orange County water agencies”; the HBDP “will reduce demands on the existing imported water system”].) Orange County’s need to import water to meet demand has remained unchanged over the years and far surpasses the design capacity of the HBDP. See Responses to Comments R4RD-3, R4RD-9, and R4RD-13 concerning the need for HBDP desalinated water and the State Board’s determination not to prioritize or rank water supply alternatives. As described therein, it is appropriate to look to both MWDOC’s UWMP and OCWD’s Groundwater Management Plan for determining the need for the HBDP’s desalinated water. As described at length in Poseidon’s previous submittals, both documents identify the HBDP as a potential planned water supply project for up to 56,000 afy. Therefore, the “identified need for desalinated water” is “consistent” with “an applicable adopted urban water management plan” and “other water planning documents,” in accordance with Ocean Plan Chapter III.M.2(b)(2).

Further, with respect to R4RD’s claims that demand has remained stable, please see Appendix OO, a July 7, 2016 letter from MWDOC, confirming that MWDOC projects total direct and indirect water demands to increase by 2040, even with investments in water use efficiency.

Comment R4RD-19

CONCLUSION

Neither Poseidon nor their partner OCWD has provided sufficient evidence to prove the need for a 50mgd seawater desalination facility. Poseidon’s response to CCKA does not argue the Fryer Report’s analysis is flawed, they errantly argue that it is not germane and is irrelevant. Ironically, in making their rebuttal argument they have clearly exposed their own flawed interpretation of OPA, and their so-called documentation of “need” is not germane nor relevant. The Regional Board must reject their arguments.

We strongly recommend the Regional Board review the California Public Utilities Commission record and decision approving a Certificate of Public Convenience and Necessity for the approved seawater desalination facility in Monterey. The CPUC is admittedly enforcing different regulatory authority than the Regional Board, nonetheless their method for considering and documenting “need” is instructive.

See eg. <http://docs.cpuc.ca.gov/publisheddocs/published/g000/m228/k102/228102918.pdf> [“Need for Water Supply” starting at page 18]

Unless or until Poseidon can sufficiently prove a defined “need” that is consistent with MWDOC’s UWMP (as opposed to the “desire” in OCWD’s plans), Poseidon must propose an alternative facility design capacity that utilizes subsurface intakes.

Response to Comment R4RD-19

See Responses to Comments R4RD-3, R4RD-9, and R4RD-13 concerning the need for HBDP desalinated water and the State Board’s determination not to prioritize or rank water supply alternatives. As described therein, it is appropriate to look to both MWDOC’s UWMP and OCWD’s Groundwater Management Plan for determining the need for the HBDP’s desalinated water. As described at length in Poseidon’s previous submittals, both documents identify the HBDP as a potential planned water supply project for up to 56,000 afy. Therefore, the “identified need for desalinated water” is “consistent” with “an applicable adopted urban water management plan” and “other water planning documents,” in accordance with Ocean Plan Chapter III.M.2(b)(2).

Further, R4RD’s comparison to the California Public Utilities Commission’s (“CPUC”) review of the Monterey Peninsula Water Supply Project (“MPWSP”) is inapposite. Because the MPWSP is proposed by a regulated water utility, the CPUC must make specific findings for the MPWSP under the Public Utilities Code, including findings concerning project sizing and cost recovery, which are not applicable to the Regional Board’s Water Code section 13142.5(b) determination. (See, e.g., Pub. Util. Code §§ 1001, 1002.)

Comment R4RD-20

3. Technical Feasibility

CCKA argues in their letter that Poseidon’s submittals to the Regional Board are not sufficient proof that slant wells are not technically feasible. CCKA’s attachments included a study by HydroFocus -- a thorough review and analysis of the Geosyntec reports Poseidon submitted to show slant wells are not feasible. HydroFocus has direct and relevant experience from analyses of slant wells for the proposed CalAm Monterey desalination facility.

HydroFocus’ report used the same computer model as Geosyntec for additional runs of the model using different potential input variables, and concluded that several steps must be taken, including collection of additional data, to improve the model and increase confidence in the output. Poseidon seems to ignore the reasoning for the “next steps” recommended by HydroFocus, and instead attempts to defend the results of Geosyntec’s “screening tool” assumptions and results.

Response to Comment R4RD-20

As Poseidon explained in its August 21 submittal, the subsurface intake models were developed to evaluate the feasibility of subsurface intakes for achieving the design intake rates and evaluate the potential impacts of pumping. (See Appx. CCCCC, p. 17.) The model design and assigned properties were based on abundant geotechnical data, such as boring logs, geotechnical tests,

hydraulic testing data, and existing models (including OCWD’s groundwater model).⁵ (*Ibid.*) The models developed by Geosyntec are appropriate and confirm that subsurface intakes are infeasible at the HBDP site.

Moreover, Poseidon has addressed the technical limitations with the additional models run by HydroFocus. (See Appx. CCCCC, pp. 21-23.) In short, the additional runs reported by HydroFocus “are of limited value because they neglected to use the recommended revised base case values of Kh and Kv of 1 and 0.1 ft/d, or lower values, for the model layers overlying the Talbert Aquifer for any of their model runs.” (*Id.*, p. 23.)

In addition, the “additional steps” identified by HydroFocus to purportedly improve the model are neither legally required nor practical. (*Id.*, pp. 18-20.) HydroFocus identifies, among other things “aquifer tests” and “calibration/verification using water level data.” (*Ibid.*) HydroFocus is essentially advocating for a test slant well to gather groundwater data that can be incorporated into the model. (See *ibid.*) The Desalination Amendment does not require Poseidon to construct a test well to gather data for a feasibility analysis. Nor is there any need to do so. The robust documentation and data concerning the feasibility of subsurface intakes at the HBDP site is more than sufficient to permit the Regional Board to conduct its Water Code section 13142.5(b) analysis. (See Ocean Plan, Ch. III.M.2.a(1).)

Comment R4RD-21

The CCKA letter also cites and refers to documentation of two seawater desalination projects currently proposed to use slant wells for the intake of source water – the Doheny project and the CalAm-Monterey project. We want to add to CCKA’s comments that these two project proposals differ from the Poseidon project in one glaring way -- both the Doheny and Monterey projects were designed to use slant wells to take advantage of the economic and environmental benefits of avoiding full conventional pre-treatment. Consequently, the project proponents did thorough feasibility testing, including developing test wells to ground-truth computer modeling, as a part of their project development. In contrast, Poseidon’s business model was founded on co-locating with coastal generators to utilize their existing open ocean cooling water intakes - which are now being abandoned by the power plant owners to come into compliance with California regulations compelling the use of best available technology for seawater intakes for cooling purposes. Despite adoption of the regulations for cooling water intakes finalized in 2011, and the efforts by the power plant owner to come into compliance by 2020, Poseidon continues to pursue their co-location business model by declaring the project a “stand alone” operation of the outlawed cooling system. Consequently, Poseidon has an incentive not to gather data and fully analyze the feasibility of slant wells, and that resistance is apparent in its responses to the CCKA letter and attached studies.

⁵ In fact, OCWD staff update OCWD’s groundwater model approximately every three to five years, “guided by new information warranting the effort . . . or by needed model evaluations using the most recent years.” (Appx. GG, p. 3-34.)

Response to Comment R4RD-21

See Response to Comment R4RD-20. Comment R4RD-21 includes a number of misunderstandings regarding the general history of slant wells and the purported environmental and economic benefits of slant wells at the proposed site of the HBDP. There are approximately 18,000 known desalination installations worldwide, about one-third of which are seawater desalination facilities. Since 2001, over 2,500 full-scale reverse osmosis seawater desalination plants have been built around the world, none of which utilize slant well seawater intake technology. Because of this lack of data, the proponents of desalination facilities proposed in Monterey and Doheny conducted pilot testing to determine if the technology was feasible given site-specific considerations.

R4RD's supposition that slant wells would reduce pretreatment costs and environmental impacts in this location is unfounded and conflicts with ISTAP's findings. First, there is no documented long-term performance from a full-scale slant well desalination plant to substantiate this claim. Second, the ISTAP Phase 2 report found that a subsurface intake (*i.e.*, subsurface infiltration galleries) in this location would still require some level of pretreatment that had immaterial savings when compared to traditional pretreatment associated with a screened ocean intake.

R4RD's challenge to Poseidon's business model is a red herring, seeking to distract from the myriad technical reports and conclusions from several hydrogeologists regarding the feasibility of subsurface intakes, particularly slant wells, at the HBDP site, including ISTAP reports, the Coastal Commission's Well Investigation Team's ("WIT") process, and the almost two decades-long environmental review of the HBDP including the Regional Board's own 2012 Water Code section 13142.5(b) compliance determination:

[A]lternative subsurface intake systems were determined not to be the environmentally preferred alternatives. Taking into account economic, environmental and technological factors, the Regional Water Board finds that the alternative subsurface intakes are not feasible.

The analysis of subsurface intakes has been a primary focus throughout the HBDP's fifteen-year permitting process and the decade-long coastal development permit process. (See Appx. CCCCC, p. 2.) The information that has been developed over the course of this process is more than sufficient to enable the Regional Board to again find that subsurface intakes are infeasible in this location.

Comment R4RD-22

In large part, Poseidon's arguments rest on the Geosyntec "screening tool" findings that slant wells would withdraw too much inland groundwater, rendering them not feasible. These arguments stem from assumptions about hydraulic conductivity values used in the model. HydroFocus' analysis used a wider range of model hydraulic conductivity values, which demonstrated the potential for decreasing the percentage of inland groundwater. Therefore, a key shortcoming is the lack of site-specific hydraulic conductivity data in the

model and calibration of the model using local data. The model currently relies on literature and professional opinions for input values for hydraulic conductivity.

Response to Comment R4RD-22

R4RD contends that the modeling used to assess the feasibility of subsurface intakes was insufficient. R4RD fails to acknowledge that at the close of ISTAP Phase 1, Coastal Commission staff requested additional investigation of different scales of intake well designs, which led to the independent WIT evaluation of slant wells and revisions to Geosyntec’s groundwater model. (Appx. CCCCC, p. 5.) The groundwater model updates were then subjected to third-party review by a Coastal Commission staff-selected hydrogeologist. (*Ibid.* [citing Appx. L].) Coastal Commission staff and WIT then requested OCWD staff hydrogeologists to review the revised groundwater model updates. (*Ibid.* [citing Appx. L2, L3].) Finally, various model revisions and slant well analyses were conducted at the request of Regional Board’s geologist. (*Ibid.* [citing Appxs. K, HH, III, MMM, QQQ].)

Further, as explained above in Response to Comment R4RD-20, the model design and assigned properties were based on abundant geotechnical data, such as boring logs, geotechnical tests, hydraulic testing data, and existing models. (Appx. CCCCC, p. 17.) This included site-specific geotechnical and geophysical data. (*Id.*, p. 18.)

Comment R4RD-23

Further, Poseidon relies on their project partner OCWD’s rigid objection to modify the seawater intrusion barrier management to adjust to the benefits of slant wells in reducing seawater intrusion.

Response to Comment R4RD-23

As an initial matter, OCWD is not a co-applicant with Poseidon for the HBDP, but rather a purchaser of the HBDP’s product water. Further, as explained in the SLC’s Supplemental Environmental Impact Report (“2017 SEIR”), OCWD is a regional water agency responsible for reviewing and issuing approvals for the HBDP. (2017 SEIR, p. ES-6.)

In addition, OCWD’s concerns with the potential impact of subsurface intakes on the Talbert Barrier are well-founded. OCWD has injected recycled water at the Talbert Barrier for more than 35 years, and injection is “critical for sustaining groundwater production in Orange County.” (Appx. CCCCC, p. 21.) As stated in OCWD’s Groundwater Management Plan 2015 Update, “[s]eawater intrusion became a critical problem in the 1950s,” prompting OCWD to construct the Talbert Barrier in 1975. (Appx. GG, p. ES5.) The injection of water “forms a hydraulic barrier to seawater that would otherwise migrate inland toward areas of groundwater production.” (*Id.*, p. ES6.)

Although Poseidon acknowledges that subsurface intakes might reduce the inland migration of seawater within the Talbert Aquifer because subsurface intakes pumping could increase the hydraulic gradient from inland toward the coastal margin, a significant portion of the water pumped by the subsurface intakes would come from the inland aquifers and the Talbert Barrier

injection wells. (Appx. CCCCC, p. 17.) This would reduce the effectiveness of injection wells' replenishment of the Aquifer by reducing the yield of the groundwater basin. (*Id.*, pp. 17, 36.)

Comment R4RD-24

In large part, Poseidon argues CCKA's letter and attached HydroFocus review are not relevant to enforcement of the OPA because:

- a. HydroFocus recommended data collection that Poseidon feels is unnecessary for "screening" analyses;
- b. OCWD will not adjust the volume of water injected into the seawater intrusion barrier to complement the slant wells; and,
- c. OCWD would need to charge their member agency a replenishment assessment fee for freshwater lost to the slant well intake.

Poseidon and OCWD have failed to supply "sufficient information" and consequently the Regional Board must demand "additional studies and information . . ." See III.M.2(a)(1)

As explained in more detail below, if Poseidon's rebuttal points are accepted by the Regional Board, the required proof that slant wells are "technically infeasible" before making an exception to the mandate to use the best technology available (subsurface intakes) will be rendered all but meaningless.

For example, below are comments on 3 objections Poseidon raised in the rebuttal to the CCKA submittals, taken from their attached document "Attachment CCCCC."

Response to Comment R4RD-24

R4RD mischaracterizes Poseidon's response; Poseidon does not argue that these considerations are irrelevant to the enforcement of the Desalination Amendment. To the contrary, these considerations are relevant to show the infeasibility of subsurface intakes.

First, R4RD fails to provide any support for its assertion that Geosyntec's modeling, and use of that modeling as a "screening tool," is insufficient as a matter for law to inform the Regional Board's analysis. Please refer to Response to Comment R4RD-22 for additional discussion of the adequacy of the modeling.

Second, please refer to Response to Comment R4RD-23 for a discussion of the Talbert Barrier and potential impact of subsurface intakes on the Talbert Barrier.

Finally, the economic impact related to the replenishment assessment is one of several reasons, not the exclusive reason, why subsurface intakes are not feasible.

Comment R4RD-25

It is important to note at the outset that we agree with the CCKA assertion that the OPA compels the use of subsurface intakes because it has already been determined in the OPA that they are the best available technology to minimize the intake and mortality of marine life.

The OPA also includes conditions that would allow an exception to the rule. One exception, generally speaking, is that slant wells would not be technically feasible. The question for the Regional Board is whether or not Poseidon has complied with the OPA mandate in Section 2(a)(1) to provide “sufficient information” to overcome the burden of proving slant wells are not feasible, or if the Regional Board needs “additional information and studies” to make a finding that slant wells are not feasible. The answer is clearly the latter.

Response to Comment R4RD-25

As explained above in Response to Comment R4RD-2, the Desalination Amendment does not compel the use of subsurface intakes. The Desalination Amendment expressly permits the use of surface water intakes when subsurface intakes are not feasible.

Further, R4RD misinterprets the “proof” requirements of the Desalination Amendment. Under the Desalination Amendment, Poseidon’s request “shall include sufficient information for the regional water board to conduct the analyses” of Water Code section 13142.5(b). (See Ocean Plan, Ch. III.M.2.a(1).) As described in Response to comment R4RD-1, Poseidon has submitted more than sufficient information demonstrating that subsurface intakes, including slant wells, are infeasible at the HBDP site.

Comment R4RD-26

a. **Poseidon states:** “As discussed above, the models are designed as screening tools and assigned properties are based on well-established models and existing hydraulic testing data as well as site-specific geotechnical and geophysical data.” See CCCC at page 18 [emphasis added] See also page 22: “The Coastal Commission’s independent model reviewer and the WIT review panel that worked with the Coastal Commission on requesting additional model sensitivity runs indicated that the K_h and K_v values of 10 and 1 ft/d were too high. Consequently, they concluded that the model likely underestimated the contribution from inland aquifers to the slant well pumping.” [citations omitted, emphasis added]

Poseidon is responding to HydroFocus’ recommendations that: “Several additional steps can be taken to improve the model and increase confidence in evaluating impacts of the project.” That is, HydroFocus is recommending improving the computer modeling by collecting data to replace assumptions about the “likely” hydraulic conductivity. Poseidon’s response simply verifies that the recommended data is missing and that the evidence they have submitted as proof is designed as a “screening tool.” Feasibility analysis requires more than a screening tool. A well-calibrated model based on data collected at the proposed site is essential for a determination of feasibility.

Response to Comment R4RD-26

R4RD mischaracterizes Poseidon’s response. Poseidon did not assert or imply that any data is missing. To the contrary, Geosyntec’s groundwater model incorporates various data points and supports the conclusion that subsurface intakes are not feasible at the HBDP site. For additional discussion, please refer to Responses to Comments R4RD-1, R4RD-20, and R4RD-22.

Moreover, R4RD provides no legal support for its claim that the Regional Board’s feasibility analysis requires something different or above and beyond the groundwater modeling and other technical investigations performed on subsurface intake feasibility. In essence, R4RD is asking the Regional Board to require Poseidon to construct and gather data through a test slant well, which is not required when slant wells have already been shown to be technically infeasible in this location. See Responses to Comments R4RD-1 and R4RD-20.

Comment R4RD-27

Further, their response admits that where data is used in the model, it is limited to “existing data.”

Response to Comment R4RD-27

R4RD challenges Geosyntec’s and Poseidon’s reliance on “existing” groundwater data, but R4RD provides no support for why this existing data is legally insufficient. The Regional Board may rely on the extensive existing groundwater data compiled and analyzed by OCWD, ISTAP, WIT, and other hydrogeologists throughout the HBDP’s decades-long environmental review process. See Responses to Comments R4RD-20 and R4RD-22.

Comment R4RD-28

The response by Poseidon ignores the fact that both the CalAm Monterey and Doheny projects conducted testing and data collection to improve the modeling, resulting in findings that slant wells at those sites were feasible. That is not to say that the proposed site in Huntington Beach, nor alternative sites nearby, would also be technically feasible for slant wells – it simply offers examples of how to ensure “sufficient information” is presented before the Regional Board considers an exception to the rule mandating subsurface intakes.

Response to Comment R4RD-28

See Response to Comment R4RD-21 above. The MPWSP and the Doheny project utilized test slant wells to determine the feasibility of subsurface intakes at those particular project sites. However, R4RD cites no legal requirement under the Desalination Amendment or Water Code that Poseidon is likewise required to construct and operate a test slant well to gather data when other studies and modeling show that slant wells are infeasible at this location. Test slant wells are not the sole means to obtain sufficient data to inform groundwater modeling. In fact, R4RD concedes that a slant well may not be technically feasible at the HBDP site. As explained in Responses to Comments R4RD-20 and R4RD-22, the modeling performed is more than sufficient to support a determination that subsurface intakes are infeasible at the HBDP site.

Comment R4RD-29

Poseidon seems to argue elsewhere that because the Monterey and Doheny projects have yet to be built and operated, they are not proven as “available.” That argument is not relevant to the use of the computer modeling to assess feasibility and the Regional Board mandating “sufficient information” and/or “additional studies and information if needed.” Further, slant wells are a relatively common technology. The fact they are not yet used in California for seawater desalination intakes is a result of limited development of seawater desalination facilities in California – none since adoption of the OPA – not evidence that slant wells are not “available.”

Response to Comment R4RD-29

See Response to R4RD-21 above. R4RD mischaracterizes Poseidon’s response. Poseidon did not argue that the availability of slant wells impacted the groundwater modeling performed by Geosyntec. Rather, Poseidon stated that “there is very little data on the long-term operation of wells to definitely determine they can be operated successfully.” (Appx. CCCCC, p. 40; see also *id.*, p. 29 [noting that slant well technology has not yet been used for a full-scale desalination plant].) This fact, along with ample site-specific data in the Regional Board’s record, are relevant facts that the Regional Board should consider in its feasibility analysis.

Comment R4RD-30

Further, we note that Poseidon does not state they used “all” existing data available. Without knowing otherwise, it seems possible that there is “existing” data that was not included in the modeling.

Response to Comment R4RD-30

See Response to Comment R4RD-27. As described therein, the modeling appropriately relied on existing data, and was overseen by Coastal Commission staff, the WIT and OCWD. R4RD’s suggestion that data was improperly excluded is pure conjecture and should not be given any weight.

Comment R4RD-31

To meet the burden of proving slant wells are not feasible, Poseidon must be compelled to use all existing data. And where existing data is not sufficient, Poseidon must be compelled to take additional steps to collect data where necessary to improve the model and increase confidence in evaluating the impacts of slant wells.

Response to Comment R4RD-31

See Responses to Comments R4RD-27 and R4RD-30. In addition, R4RD misconstrues the “burden of proof” set forth in the Desalination Amendment; Poseidon simply must provide the Regional Board with sufficient information for the Regional Board to conduct its analyses under Water Code section 13142.5(b), which Poseidon has done. See Response to Comment R4RD-25.

Comment R4RD-32

Because OPA only applies to new or expanded facilities, the decision before the Regional Board on whether or not to grant an exception to the mandate to use subsurface intakes would be final. The finality of the decision makes it critical to ensure the greatest possible “confidence in evaluating” the feasibility of slant wells before granting the permit. If Poseidon refuses to use all available data, or to provide additional studies or information needed, the permit must be denied.

Response to Comment R4RD-32

R4RD misconstrues the Desalination Amendment, which expressly permits the use of surface water intakes if subsurface intakes are not feasible. Poseidon is not seeking an exception to the Desalination Amendment’s requirements. See Response to Comment R4RD-2. Further, the groundwater modeling is based on extensive and myriad data points and has been reviewed by third-party reviewers and agency experts. See Responses to Comment R4RD-20 and R4RD-22. Poseidon has submitted sufficient information to the Regional Board to allow it to conduct the required feasibility analyses. See Response to Comment R4RD-25.

Comment R4RD-33

We agree with CCKA that: *“The recent communications posted on the Regional 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 of 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.”* See: CCKA letter at page 15 https://www.waterboards.ca.gov/santaana/water_issues/programs/Wastewater/Poseidon/2018/Subsurface_Feasibility_Poseidon_Huntington_Beach_7.9.2018.pdf

The Regional Board cannot rely on a “screening tool” analyses of slant well feasibility. The Monterey and Doheny projects serve as a template for the type of technical analyses required for “sufficient” proof that slant wells are not technically feasible. For example, the Monterey project used extensive field data collection efforts to inform and calibrate groundwater flow models. The Regional Board must require “additional studies and information” from Poseidon before concluding that slant wells are not feasible. See III.M.2(a)(1)

Response to Comment R4RD-33

R4RD provides no legal support for its proposition that the Regional Board cannot rely on the extensive groundwater modeling in the record and that Poseidon instead must construct and operate a test slant well to gather data. There is no such requirement in the Ocean Plan or Water Code. See Response to Comment R4RD-20. Further, slant well feasibility does not solely involve the question of hydrogeological performance. The Regional Board’s 2012 Water Code section 13142.5(b) compliance determination found slant wells to be infeasible at the HBDP site for

myriad reasons, including environmental and economic considerations. Nothing in the record or the Desalination Amendment calls into question the Regional Board’s 2012 determination.

Comment R4RD-34

b. Poseidon states: *“SSIs would reduce the inland migration of seawater within the Talbert Aquifer because the SSI pumping would increase hydraulic gradient from inland toward the coastal margin. This is why a portion of the water pumped by the SSIs would come from the inland aquifers and the Talbert Barrier Injection wells. Reduction of the effectiveness of aquifer replenishment by the Talbert Barrier Injection wells is unacceptable to the OCWD.”* See CCCCC at page 17. See also page 21: *“Also, for 6 of the additional model runs, HydroFocus assigned a constant head elevation of sea level (0 ft msl) at the inland model boundary, which represents the Talbert Injection Barrier. This is inconsistent with the observed groundwater conditions near the injection barrier and represents curtailment or drastic decrease of a crucial component of OCWD’s aquifer replenishment program. Injection of recycled water at the Talbert Barrier has been occurring for more than 35 years and is critical for sustaining groundwater production in Orange County. Accordingly, the model runs without significant injection at the Talbert Barrier represent unacceptable scenarios.”*

Poseidon appears to misinterpret the findings in the HydroFocus review that: *“Pumping at lower rates than originally simulated will reduce impacts on the groundwater system. 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.”*

Response to Comment R4RD-34

Contrary to R4RD’s assertions, Poseidon has not misinterpreted HydroFocus’s findings, as shown in the first sentence of R4RD’s quoted response. Poseidon acknowledges that subsurface intakes could reduce the inland migration of seawater within the Talbert Aquifer. (Appx. CCCC, p. 17.) However, R4RD ignores the remainder of Poseidon’s response—that subsurface intake pumping would withdraw fresh water from the inland aquifers. (*Id.*, pp. 17, 36.) Subsurface intake pumping would also impact OCWD’s injection wells. See Response to Comment R4RD-23.

Comment R4RD-35

CCKA also states in their letter: *“It is clear from the recent responses to the Regional 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 Geosyntec 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.’” CCKA letter at page 15

Response to Comment R4RD-35

OCWD has been extensively engaged with regulatory agency staff regarding the feasibility of slant wells at the HBDP site. OCWD’s determination that slant wells would have an unacceptable impact on the Orange County Groundwater Basin and OCWD’s management of seawater intrusion is documented repeatedly in the Regional Board’s administrative record (see September 28, 2015, February 12, 2016, and May 18, 2018 OCWD letters).

Comment R4RD-36

First, HydroFocus does not state an increase in the gradient from the inland aquifer toward the coastal margin would completely eliminate some of the water withdrawn coming from inland aquifers. As explained in the Hanneman Report and summarized below, withdrawing water from the inland aquifer does not render slant wells technically infeasible, it simply means that the net addition of the Poseidon product water to the OCWD portfolio would be the gross output of the treatment plant minus whatever inland water was mixed in the intake. The question is not whether inland water would be withdrawn in the intake. The question is how much water comes from the inland aquifer, and how much does that change when the volume of water pumped from the slant wells is changed and/or the volume of water injected into the barrier is adjusted. HydroFocus’ analysis indicated that reduced pumping could reduce the inland groundwater contribution to the slant wells.

Response to Comment R4RD-36

As explained in Poseidon’s August 21 submittal, initial model simulations of slant well pumping conducted in 2013 showed approximately 10 percent of the pumped water coming from inland aquifers. (Appx. CCCCC, p. 35.) These simulations included an optimistically high hydraulic conductivity for the shallow sediments between the ocean and the Talbert Aquifer. (*Ibid.*) Revised modeling based on input from the WIT showed 22 to 36 percent of the pumped water coming from the inland aquifers. (*Ibid.*)

Comment R4RD-37

Second, withdrawal from the inland aquifer does not necessarily “reduce the effectiveness of aquifer replenishment” that OCWD finds unacceptable. It is our understanding that an increase in gradient resulting from slant well pumping will complement the seawater barrier injection and allow reducing the volume of injected water necessary to maintain, if not improve, the barrier effectiveness. The HydroFocus’ report stated that project pumping

from the slant wells will likely increase the hydraulic gradient from inland areas toward the project wells. This increase in seaward gradient will enhance the movement of inland freshwater toward the coast and will likely move the seawater/freshwater interface to the west, 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 and may allow the OCWD to maintain a lower water level in the well while still obtaining the objective of reducing seawater intrusion.

Response to Comment R4RD-37

Please refer to Response to Comment R4RD-24 for a discussion of the impact of fresh water withdrawal on the groundwater basin and effectiveness of aquifer replenishment.

Comment R4RD-38

Further, it appears to us that the aquifer replenishment value of the injection wells is in flux. OCWD is currently proposing changes to the distribution of the potential Poseidon product water, including coastal agencies reducing their basin pumping to take Poseidon's water directly. Those changes may require modifying the volume of water injected into the seawater barrier – regardless of whether the seawater intake comes from slant wells. Before accepting OCWD's unwillingness to modify operation of the seawater intrusion barrier because it will affect replenishment, the Regional Board must require an analysis of proposed distribution plans and/or alternatives for replenishing the basin in the coastal area.

Response to Comment R4RD-38

OCWD has not proposed any changes to the water distribution system, including aquifer recharge components, analyzed in the City of Huntington Beach's 2010 FSEIR. (See 2017 SEIR at pp. II-16 to II-17, II-40.) If OCWD proposes to change its water distribution system, those proposed changes will undergo environmental review. Because any future changes to OCWD's water distribution system are speculative at this time, the Regional Board is not required to analyze potential changes to the distribution system in order to conduct its analysis under Water Code section 13142.5(b).

Comment R4RD-39

Finally, the project proposal is a public-private partnership. OCWD is a partner in the proposal (or there is no proposal). The burden of proof cannot be based on what is "acceptable" to the project proponents. That would allow project proponents to determine the outcome of the Regional Board's enforcement of the OPA – a case of "the fox watching the hen house."

Response to Comment R4RD-39

As stated above in Response to Comment R4RD-23, OCWD is not a project applicant, but rather a purchaser of the HBDP's product water. Neither Poseidon nor OCWD is dictating or determining the outcome of the Regional Board's administrative process. Rather, pursuant to the OPA and requests by the Regional Board, Poseidon has submitted sufficient information to the Regional

Board to allow the Regional Board to conduct its Water Code section 13142.5(b) analysis. See Response to Comment R4RD-25.

Comment R4RD-40

c. **Poseidon states:** “Moreover, extraction by subsurface intakes of groundwater from inland aquifers in Orange County would be subject to a replenishment assessment by the OCWD.” See CCCCC at page 17.

There doesn't appear to be any disagreement between Poseidon and CCKA on the issue of whether there would be some cost associated with any withdrawal of freshwater from the inland aquifer from slant well pumping.

OCWD states it would require a replenishment assessment, and Hanneman calculates the cost differently. We do not have any opinion which cost calculation is more appropriate.

Nonetheless, this comment misses the point in the Hanneman Report. The cost assessment is irrelevant to technical feasibility (as discussed more below). Further, once again, the Regional Board cannot accept the unwillingness of OCWD to pay an incremental cost as proof that slant wells are not feasible. As noted above, project proponents' willingness or unwillingness is not an objective factor to be considered by the Regional Board.

Response to Comment R4RD-40

R4RD misconstrues Poseidon's response. Poseidon does not assert that the imposition of a replenishment assessment by OCWD on the withdrawal of freshwater renders subsurface intakes only technically infeasible, but rather that the potential replenishment assessment bears on the feasibility of subsurface intakes as a whole. (See Appx. CCCCC, p. 17.) As OCWD indicated in its May 18, 2018 comments to the Regional Board:

[n]ot only would [the withdrawal of freshwater] interfere with the operation and benefits of OCWD's Talbert Seawater Barrier, the volume of extracted groundwater would need to be accounted for in OCWD's annual water budget, meaning it would need to be balanced by some combination of increased replenishment water or reduced pumping – which would be a substantial financial impact to OCWD and its ratepayers.

(See Letter from OCWD to Regional Board, *Review of Geosyntec Report prepared for Poseidon to Evaluate the Feasibility of Subsurface Seawater Intakes*, p. 2 (May 18, 2018).)

In addition, R4RD mis-frames the relevant consideration. It is not whether OCWD is willing to incur a replenishment assessment, but whether the potential of a replenishment assessment impacts the feasibility of subsurface intakes, which it does.

Comment R4RD-41

d. **As a final note, Poseidon** repeatedly complains that they have been supplying information for over 15 years and that the record is sufficient. But R4RD has been tracking the project since its first inception and knows that the information Poseidon cites is not accurate, and their complaints about the time it has taken is the result of their own stubborn refusal to site and design a facility that can utilize subsurface intakes.

In 2005, the City of Huntington Beach was considering Poseidon's Coastal Development Permit and accompanying EIR. R4RD commented that it was reasonably foreseeable that the State would soon adopt regulations for once-through cooling and Poseidon's co-location plan would be unworkable. But those comments were ignored.

In 2010, after 5 years of complete inaction by Poseidon, the CDP expired because Poseidon failed to ask for an extension while they were not advancing the project. And in 2010 the OTC Policy was on the near horizon. So, in 2010 Poseidon applied for a new permit and Subsequent EIR to analyze a "stand alone" operation when the OTC Policy was final. R4RD cautioned that the OPA for desalination was reasonably foreseeable and should be documented in the SEIR. Poseidon objected and the SEIR was approved without that information.

In 2013 Poseidon finally applied for a CDP from the Coastal Commission. But Poseidon voluntarily withdrew the application at the 2014 decision hearing.

The following years can only be described as Poseidon's continued stubborn resistance to planning a facility that is sited and designed to utilize subsurface intakes in compliance with the adopted OPA. It is now our prediction that the Monterey and Doheny projects will find State permits a relatively easy path because they chose the best available technology in the first place, and then completed truly sufficient testing to document the feasibility of slant wells. The Regional Board should be neither impressed by, nor sympathetic to, Poseidon's whining about the time spent trying to force approval of exceptions to the rule rather than spending their time and resources on full compliance with the laws of the State.

Response to Comment R4RD-41

As an initial matter, Poseidon's coastal development permit approved by the City of Huntington Beach in 2010 has not "expired," and thus, R4RD's argument is irrelevant. R4RD's purported fortune-telling abilities have no bearing on the Regional Board's feasibility analysis and they do not impact the extensive information on the feasibility of subsurface intakes at the HBDP site. The feasibility of subsurface intakes at the HBDP site have been investigated and well-documented since the City of Huntington Beach's environmental review beginning in 2005. (See Appx. CCCCC, p. 2.) The City of Huntington Beach again evaluated subsurface intakes as part of the 2010 FSEIR, and the Regional Board evaluated subsurface intakes in connection with approving the HBDP's NPDES permit in 2012. (*Id.*, p. 3.) The ISTAP and WIT investigations and evaluations then validated the decade-long investigation of subsurface intake feasibility. (*Id.*, pp. 3-5.)

Further, as explained above in Response to Comment R4RD-2, Poseidon is not seeking any exception from the requirements of the Desalination Amendment. The Desalination Amendment expressly provides for the use of surface water intakes if subsurface intakes are not feasible, as is the case here.

Comment R4RD-42

CONCLUSION

It is critical to note that the proposed Poseidon-Huntington desalination facility is the first to be reviewed for consistency with the adopted mandates of the OPA. To allow an exception to the clear mandate to use subsurface intakes, the OPA is clear that applicants must supply sufficient evidence proving that subsurface intakes are not feasible, and if the application fails to provide sufficient evidence, the Regional Board may require additional studies and information needed for a sufficient feasibility analysis.

The CCKA letter and HydroFocus study clearly identify that a “screening tool” is insufficient evidence and that additional studies and information are required before the Regional Board can conclude that subsurface intakes are not feasible.

The Regional Board must communicate to Poseidon that their responses to the CCKA letter and HydroFocus study are not sufficient, and that additional data must be collected to improve the confidence in the computer modeling submitted to date. In the absence of sufficient evidence, the application must be denied.

Response to Comment R4RD-42

As explained above in Response to Comment R4RD-2, Poseidon is not seeking an exception to any “mandate” in the Desalination Amendment. The Desalination Amendment does not “mandate” subsurface intakes. Under the Desalination Amendment, Poseidon must supply sufficient information to the Regional Board for it to conduct the analyses required under Water Code section 13142.5(b). See Response to Comment R4RD-25. As described in Response to Comment R4RD-1, Poseidon has submitted more than sufficient information confirming that subsurface intakes are infeasible at the HBDP site.

Moreover, R4RD provides no legal support for its claim that the groundwater modeling or any other “screening tool” is insufficient to inform the Regional Board’s analyses. Similarly, R4RD does not cite any requirement in the Ocean Plan or Water Code that mandates the collection of additional data. The existing groundwater modeling is based on extensive and robust data and has been reviewed and refined by Coastal Commission and Regional Board staff. See Responses to Comment R4RD-20 and R4RD-22.

Comment R4RD-43

4. Economic Feasibility

CCKA argues in their letter that the intake of freshwater from the inland aquifer is an economic consideration, not a technical feasibility concern. That argument is supported by

a report written by Michael Hanneman, an expert in resource economics with experience in economic analyses of water management issues for the State Water Board.

Much of Poseidon’s response simply reiterates their arguments rebutting the topics of “need” and “technical feasibility” above. We offer some responses. But Poseidon fails to directly rebut the primary message in the Hanneman report: withdrawal of freshwater in a slant well is an economic consideration. Poseidon seems to assert that, because the economic cost of that freshwater withdrawal is unacceptable to OCWD, it is infeasible in terms of the OPA. As discussed above, OCWD is a project partner. Allowing OCWD and Poseidon to decide for the Regional Board what is acceptable or not acceptable would effectively allow the project proponent to enforce the OPA itself – the “fox watching the hen house.”

Response to Comment R4RD-43

R4RD misses the point. The withdrawal of fresh water bears on the feasibility of subsurface intakes as a whole, regardless of whether the consideration is considered technical or economic. As demonstrated by ISTAP’s Phase 1 report, the withdrawal of fresh water from inland aquifers does demonstrate the technical infeasibility of slant wells. (See Appx. CCCCC, p. 35 [citing Appx. F].) In addition, the two considerations are not necessarily mutually exclusive. The withdrawal of freshwater through subsurface intake pumping demonstrates that subsurface intakes are *both* technically and economically infeasible. (See *id.*, pp. 16-17.) That the withdrawal of fresh water comes with economic costs does not detract from the technical infeasibility of slant wells.

Further, Poseidon does address the Hanemann report concerning the withdrawal of fresh water from the Orange County Groundwater Basin, devoting multiple pages to its response. (See *id.*, pp. 34-38.) As ISTAP confirmed in its Phase 1 report, slant wells are technically infeasible due, in part, to local hydrologic conditions that would result in adverse environmental impacts to fresh water aquifers and local wetlands. (*Id.*, p. 35 [citing Appx. F].) Following input on and revisions to the groundwater model from Coastal Commission and Regional Board experts, Geosyntec appropriately concluded that:

[R]egardless of the location of the length of hypothetical slant wells beneath the Huntington Beach coastline, very optimistic screening modeling indicates that the pumping would influence the performance of the Talbert Barrier and reduce the effectiveness of aquifer replenishment, and more realistic modeling[] indicates that the pumping would have a major influence on the performance of the Talbert Barrier and prevent effective aquifer replenishment. The large drop in the water table that would be caused by pumping of groundwater along the coastal margin of Huntington Beach would result in significant impacts to coastal wetlands and marshes and could also cause subsidence of the ground surface that could impact the structural integrity of the Pacific Coast Hwy and structures in the vicinity.

(*Id.*, p. 38.) Contrary to R4RD’s contentions, Geosyntec’s assessment of the technical feasibility of slant wells is premised on more than just the potential replenishment assessment associated with the withdrawal of fresh water.

In addition, as explained above in Response to Comment R4RD-23, OCWD is not a project applicant, and neither OCWD nor Poseidon is dictating the Regional Board’s feasibility analysis.

Comment R4RD-44

Further, CCKA argues that, had the ISTAP thoroughly analyzed the life-cycle cost savings of slant wells it would have uncovered the significant construction and operational savings from avoiding the need for full conventional pre-treatment necessary for open ocean intakes. And, of course, that full pre-treatment is a major source of chemicals diluted in the wastewater treatment system and/or brine discharge – making the avoidance of full pre-treatment both an economically and environmentally preferred alternative.

Response to Comment R4RD-44

Contrary to R4RD’s assertions, ISTAP did analyze the potential operational and maintenance savings associated with subsurface intakes, and that analysis did not alter ISTAP’s conclusions that subsurface intakes would not be feasible. (See Appx. CCCCC, p. 30 [citing Appx. G]; see also Appx. F, p. 45 [recognizing that subsurface intakes “may eliminate or significantly reduce the need for a pretreatment system.”].) To the extent that R4RD complains that the potential cost savings associated with *slant wells* were not analyzed by ISTAP, the ISTAP Phase 1 report makes plain that “cost and other factors normally considered under the California Coastal Act definition of feasible were not addressed in Phase 1 of the assessment.” (Appx. F, p. 13.) Because slant wells were determined to be technically infeasible, it was unnecessary for ISTAP to consider specifically the potential cost savings associated with slant wells in Phase 2.

Comment R4RD-45

Again, Poseidon has failed to respond in a way that accurately interprets the rules in OPA and has not supplied sufficient analyses to allow an exception to the rule mandating the use of subsurface intakes.

Response to Comment R4RD-45

As explained above in Responses to Comments R4RD-25 and R4RD 2, R4RD misinterprets the requirements of the Desalination Amendment and erroneously argues that Poseidon is seeking an exception to the Desalination Amendment’s requirements.

Comment R4RD-46

a. **Hanneman simply stated:** *The ISTAP reports are being relied upon by the Applicant as evidence that sub-surface intakes are neither technically nor economically feasible, making the Poseidon project eligible for an exemption to the regulatory preference compelling the use of sub-surface intakes. See CCCCC at page 25*

Poseidon responds in a long and mostly irrelevant reply that: *“Poseidon is not relying exclusively on the Coastal Commission’s ISTAP Phase 1 and Phase 2 reports to support a determination that subsurface intakes are infeasible. Instead, Poseidon is relying on the entirety of the Project’s fifteen-year permitting history and the extensive evaluation of subsurface intake feasibility including but not limited to the Project’s 2005 FREIR, 2010 FSEIR, 2012 Regional Board NPDES Permit and State Lands Commission’s 2017 FSEIR.*

Nonetheless, the Regional Board’s website lists over 100 Project reports, including the results of the only independent subsurface intake feasibility reviews, which were conducted by the ISTAP and WIT. Also, only Geosyntec’s Talbert Aquifer model has been used in an independent process (WIT) and the results were independently peer reviewed. Id.

Later Poseidon adds: *“The ISTAP is the most comprehensive and independent, site-specific evaluation of subsurface seawater intake technology feasibility ever conducted in the state. Further, the ISTAP Phase 1 report conclusions are consistent with prior conclusions reached by the City of Huntington Beach in 2005 and 2010 and the Regional Board in 2012, as well as with the State Lands Commission’s 2017 SEIR.”* CCCCC at page 28

Response to Comment R4RD-46

R4RD fails to explain how Poseidon’s response is “irrelevant.” To the contrary, Poseidon’s response shows the breadth of the analysis of subsurface intakes conducted to-date and the infeasibility of subsurface intakes at the HBDP site.

Comment R4RD-47

First, it is clear that the investigations of slant wells for the Monterey and Doheny facilities were far more comprehensive than the ISTAP Reports. To the extent the ISTAP and WIT relied on the Geosyntec Report, it was reliance on a “screening tool.” In contrast, the Monterey and Doheny analyses collected and analyzed data. And the WIT report wasn’t available until after the ISTAP Phase 1 had found slant wells to be technically infeasible. As noted in the Hanneman review, ISTAP Phase 2 did not analyze the economic feasibility of slant wells because Phase 1 had already discounted them as technically infeasible.

Response to Comment R4RD-47

R4RD is essentially asking Poseidon to construct and operate a test slant well to gather data. As explained above in Response to Comment R4RD-20, a test slant well is neither required under the Ocean Plan or Water Code nor practical given the extensive data already available on the feasibility of slant wells at the HBDP site. In addition, R4RD provides no legal support for its proposition that the groundwater modeling conducted by Geosyntec as a “screening tool” was improper or insufficient. See Responses to Comment R4RD-20 and R4RD-22.

Moreover, R4RD fails to articulate why the timing of the WIT report vis-à-vis the ISTAP Phase 1 report is significant or problematic. The ISTAP Phase 1 report “was not the end of the investigation of slant well feasibility,” because Coastal Commission staff requested additional investigation of different intake well designs. (Appx. CCCCC, p. 5.) Coastal Commission staff’s request led to the independent WIT evaluation of slant wells. (*Ibid.*) Both the ISTAP and WIT

processes serve as independent validation of the conclusions previously reached by local and state agencies regarding the feasibility of subsurface intakes. (See *id.*, p. 4 [citing Appxs. F, G].)

Comment R4RD-48

Second, the prior documents Poseidon repeatedly refers to, including the CEQA documents and now inapplicable permit issued by the Regional Board, were all completed prior to adoption of the OPA. And the 2017 SEIR certified by the State Lands Commission is currently under review by a court, and the challenge includes that the SEIR was inadequate because it did not review the feasibility of subsurface intakes.

Response to Comment R4RD-48

First, the fact that the ISTAP reports pre-date the Desalination Amendment is irrelevant. Intervening policy choices do not affect the technical and scientific analysis in the ISTAP reports or the 2010 FSEIR. For example, subsurface intakes did not suddenly become technologically feasible after the Desalination Amendment.

In addition, R4RD's reliance on CCKA's arguments in its lawsuit challenging the SLC's 2017 SEIR is misplaced. As Poseidon and the SLC asserted in the litigation, the 2017 SEIR—which incorporated by reference and is to be read in conjunction with the 2010 FSEIR prepared by the City of Huntington Beach—evaluated the feasibility of subsurface intake alternatives. CCKA's argument in litigation cannot be taken as definitive proof that the 2017 SEIR did not review the feasibility of subsurface intakes.

Comment R4RD-49

Finally, the Poseidon responses describe the timeline and tasks of the ISTAP Phase 1, as well as the ISTAP Phase 2 and WIT review process. The insufficiency of the Geosyntec and WIT "screening tool" to prove technical infeasibility are expressed above in our section on "Technical Feasibility." But it appears to us that Hanneman was simply saying that the ISTAP Phase 2 did not analyze the economic feasibility of slant wells because the ISTAP Phase 1 had already dismissed that technology as "infeasible." And the Hanneman representation of the process is consistent with our memory as public participants commenting on the ISTAP work.

Response to Comment R4RD-49

For a discussion on the sufficiency of Geosyntec's modeling, please refer to Responses to Comment R4RD-20 and R4RD-22.

Further, as Poseidon explained in Appendix CCCCC, "CEQA, the Coastal Act, and the OPA uniformly define feasible as 'capable of being accomplished in a successful manner in a reasonable period of time taking into consideration environmental, technical, social and economic considerations.' There is no legal requirement that slant wells must also be deemed economically infeasible if already found to be any one of environmentally, technically or socially infeasible, or if slant wells cannot be successful accomplished in a reasonable period of time." (Appx. CCCCC, p. 29.) As stated in the ISTAP Phase 1 report, slant wells were determined to be infeasible because

they would interfere with the salinity barrier and the management of the freshwater basin, and would likely result in geochemical issues (e.g., oxidation states of mixing waters). (Appx. F, p. 18.) “Slant wells completed in the Talbert aquifer would draw large volumes of water from the Orange County Groundwater Basin, which in itself is considered a fatal flaw.” (*Id.*, p. 56.) Therefore, because slant wells were found to be technically infeasible, there was no requirement to assess their economic feasibility.

Comment R4RD-50

The Regional Board cannot rely on a “screening tool” analyses of slant well feasibility. The Monterey and Doheny projects serve as a template for the type of technical analyses required for “sufficient” proof that slant wells are not technically feasible. See III.M.2(a)(1) The Regional Board must require “additional studies and information” from Poseidon before concluding that slant wells are not feasible. *Id.*

Response to Comment R4RD-50

Slant wells are infeasible at the HBDP site for myriad reasons, as documented in the Regional Board’s 2012 Water Code section 13142.5(b) compliance determination. For a discussion on the sufficiency of Geosyntec’s modeling, see Responses to Comment R4RD-20 and R4RD-22. For a discussion of why a test slant well is not required, see Response to Comment R4RD-20.

Comment R4RD-51

b. **Hanneman stated:** “*ISTAP Phase 1 rejects slant wells as an option because they ‘would draw large volumes of water from the Orange County Groundwater Basin, which in itself is considered a fatal flaw’. From my perspective as an economist, this is not a valid criterion of technical feasibility – it is an economic consideration.*” See CCCCC at page 34

Poseidon writes several objections to characterizing freshwater drawdown as an economic consideration. However, ironically, Poseidon’s partner in the project seems to agree with Hanneman. Poseidon’s responses quote and cite OCWD as writing:

*“[I]t is OCWD staff’s position that a SSI constructed within the Talbert aquifer near the coast would produce an unacceptable amount of inland groundwater that would reduce the yield of the groundwater basin and, likewise, would effectively reduce the net yield of “new” water produced by an ocean desalination project. **Not only would such a reduction in net yield of an ocean desalination project undermine its objective of increasing water reliability, but it would cause the project to be economically infeasible.** For these reasons, OCWD staff would not be in favor of continued consideration of a SSI option for the Huntington Beach Seawater Desalination Project.”* See CCCCC at page 36 [emphasis added]

Contrary to Poseidon’s response, this quoted comment by OCWD confirms Hanneman’s argument that withdrawal of inland groundwater is an economic consideration.

Response to Comment R4RD-51

For a discussion of the technical infeasibility of subsurface intakes based on the withdrawal of fresh water from the Orange County Groundwater Basin, please also see Response to Comment R4RD-23.

Comment R4RD-52

Further, the OCWD quote above reveals a certain bias by OCWD to not even “continue considering a SSI option”, despite the fact there was no economic analysis performed on slant wells. This economic bias is contrary to the OPA, which states that: “*Subsurface intakes shall not be determined to be economically infeasible solely because subsurface intakes may be more expensive than surface intakes.*” See III.M.2(d)(1)(a)(ii). Rather than simply rejecting slant wells because they were more expensive than an existing open ocean intake (a fairly unremarkable finding), Hanneman argued for, and described, a rigorous economic analysis based on sound economic principles.

Response to Comment R4RD-52

Contrary to R4RD’s assertions, slant wells were not rejected as infeasible simply because they are more expensive. Please refer to Responses to Comments R4RD-1 and R4RD-49 for a discussion of why slant wells and other subsurface intakes are infeasible.

Comment R4RD-53

As noted above, the Regional Board must reject Poseidon’s “screening tool” assumptions and conclusions that slant wells are not technically feasible until they provide actual data to back up the findings. Further, if Poseidon continues to argue that slant wells are not economically feasible, it must be proven through rigorous economic analyses – not the desires of their partner agency OCWD. Finally, the cost of freshwater withdrawn in a slant well intake must be combined with the foreseeable savings of avoiding the cost of constructing and operating a full pre-treatment system – savings that were highlighted in the CCKA letter.

Response to Comment R4RD-53

For a discussion on the sufficiency of Geosyntec’s modeling, see Response to Comment R4RD-22. For a discussion of why a test slant well is not required, see Response to Comment R4RD-23. For a discussion regarding the feasibility of slant wells, see Response to Comments R4RD-49. For a discussion of ISTAP’s consideration of the potential cost savings associated with subsurface intakes, see Response to Comment R4RD-44.

Comment R4RD-54

c. **Hanneman states:** “*Rather than emerging as the outcome of a selection process which identified them as the best alternative in order to minimize the intake and mortality of marine life, the site and scale of the Huntington Beach proposal have been a fixed datum since the project’s inception twenty years ago.*” CCCC at page 31. Also, “*In short, the*

50mgd scale of the Huntington Beach facility was a pre-determined decision made without the identification of any **discrete** need for 50 mgd of supplemental water in any Urban Water Management Plan from 2002 through the most recent plan adopted for 2015.” Id at page 32 [emphasis added]

Poseidon’s response here somewhat differs from responses above. Here Poseidon asserts that:

“The scale of the Huntington Beach Project is based on meeting the Project’s objectives, which include using proven technology to affordably provide a long-term, local and reliable source of water not subject to the variations of drought or regulatory constraints; reducing local dependence on imported water and strengthening regional self-reliance; and contributing desalinated water to satisfy regional water supply planning goals. These project objectives are identified in the City of Huntington Beach’s 2005 certified FREIR and 2010 FSEIR and have remained unchanged.” See CCCCC at page 31

Once again, Poseidon’s explanation simply avoids the question. The “objectives” Poseidon cites do not include a volume of 50mgd. As pointed out above, the OPA clearly requires a showing of “need” that is consistent with an adopted UWMP – what Hanneman defines as a “discrete need.” As noted above, simply claiming that a project is listed as a potential source of additional water in an UWMP does not satisfy the OPA mandate to identify “need” for 50mgd. The “objectives” in an EIR fall even shorter than what is mandated in the OPA. An analysis of a project’s CEQA compliance with the broad “objectives” cited in the Poseidon response cannot be compared to the mandate to show “need” in the OPA. And as pointed out above, both OCWD planning documents and the CEQA “objectives” Poseidon cites here would equally apply to a facility that produced 10mgd, or 20mgd or 30mgd. It is important to refer to the HydroFocus report, which found that reducing the volume withdrawn from slant wells would likely reduce the proportional amount of inland groundwater in the intake.

Response to Comment R4RD-54

For a discussion of project need, see Responses to Comments R4RD-1 and R4RD-3.

Comment R4RD-55

Further, the 2005 and 2010 CEQA documents were prepared and certified prior to adoption of the OPA. Consequently, those documents did not consider “need” as defined in the OPA. Nor did the more recent 2017 State Lands Commission Supplemental EIR.

Response to Comment R4RD-55

As explained above, project need has not changed since the environmental review process for the HBDP began and projections of water demand were not changed by the Desalination Amendment. For a discussion of project need, see Response to Comment R4RD-3.

Comment R4RD-56

The Regional Board must require Poseidon to provide sufficient proof of “need” prior to allowing an exception to the rule mandating subsurface intakes.

Response to Comment R4RD-56

For a discussion of Project need and the Desalination Amendment’s requirements with respect to need, see Responses to Comments R4RD-3 and R4RD-5.

Comment R4RD-57

d. **Hanneman states:** *The drawdown of aquifer water is a factor that increases the effective cost per mgd supplied via desalination using a slant-well intake but, by itself, it does not constitute a “fatal flaw.” This may be why SWRCB dropped “impact on freshwater aquifer” from its criteria for technical feasibility. See CCCCC page 38*

Poseidon focuses its response on whether or not the OPA mandates a consideration of “*the critical relationship of hydrology and water quality with desalination projects.*” Id. The Poseidon response cites the OPA Staff Report:

- i. *12.1.9 Hydrology and Water Quality Desalination projects in general can have **significant** impacts to hydrology and water quality if a project were to cause or result in: Violation of any water quality standards or WDRs • **Substantially** deplete groundwater supplies or interfere **substantially** with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted) (Draft OPA Staff Report, p. 157.) [emphasis added]*

It is unclear what Poseidon is inferring by citing this language. Without data-driven technical analyses, recommended in the HydroFocus report, there is no “sufficient” evidence that groundwater supplies would have “significant impacts to hydrology and water quality”, be “substantially” depleted, nor that slant wells would “substantially” interfere with replenishment. In fact, OCWD’s responses cited above indicate that maintaining the supplies and recharge capacity would require an additional “replenishment assessment” – an economic consideration not a technical impediment. In fact, the Monterey project addressed these very same issues, and prompted additional testing that is totally absent here.

Response to Comment R4RD-57

R4RD misinterprets Poseidon’s response. As stated in Appendix CCCCC, although the Desalination Amendment does not explicitly mandate the consideration of hydrology and water quality, the SED demonstrates that the State Board evaluated these considerations in developing the Desalination Amendment. These considerations are still important for the Regional Board’s feasibility analysis. (See Appx. CCCCC, p. 39; Ocean Plan, Ch. III.M.2.d(1)(a)(i) [the Regional

Board shall consider hydrogeology and other site- and facility-specific factors in determining the feasibility of subsurface intakes].)

In addition, R4RD is essentially advocating for the construction and operation of a test slant well to gather data on the impacts of subsurface intake pumping on fresh water from inland aquifers. As explained above in Response to Comment R4RD-20, a test slant well is not required here.

Finally, whether a replenishment assessment is an economic or technical consideration does not impact the extensive findings that subsurface intakes are infeasible due to their potential to withdraw fresh water from inland aquifers. See Response to Comment R4RD-23.

Comment R4RD-58

Poseidon then cites:

- ii. *12.4.5 Hydrology and Water Quality Alternative 1 would have similar construction related impacts as those described in section 12.1.9. As such, it is unlikely that construction and operation of a coastal desalination facility would alter the drainage of streams or rivers, place housing or structures within flood plain, or redirect or impede flood waters, or expose people or structures to significant risk or loss due to flooding. **It is possible that a subsurface intake could cause or exacerbate saltwater intrusion into freshwater wells**, but it is unlikely that the regional water boards or other permitting agencies would approve such a project. One important factor to consider would be the quality (p. 190) and quantity of water to be pumped into the intake system. Another important factor to consider is the yield required to meet **the anticipated need** and ability to maintain adequate flows over the life of the project. If surface or subsurface potable water supplies are located nearby, they could potentially be impacted by pumping from subsurface wells. **Additional studies may be necessary to assess potential impacts under a range of pumping rates. If pumping from the subsurface intakes has the potential to alter groundwater flow to freshwater aquifers and wells, then the intake may need to either be relocated or flow rates reduced so existing aquifers are not affected.***

Alternative 2 would also have construction related impacts from foreseeable intake methods and discharge technologies similar to Alternative 1 and those described in section 12.1.9. As such, it is unlikely that construction and operation of a coastal desalination facility would alter the drainage of streams or rivers, place housing or structures within flood plain, or redirect or impede flood waters or expose people or structures to significant risk or loss due to flooding. Operational impacts would also be similar to Alternative 1, except that the potential for seawater intrusion would be absent from facilities that choose surface water intakes. (Draft OPA Staff Report, pp. 190-191.)

Again, it is unclear what Poseidon is implying in citing this language. First, there is no indication that slant wells here would result in exacerbating saltwater intrusion into the

basin. Both HydroFocus and Geosyntec agree that just the opposite would occur – slant wells would change the gradient and improve seawater intrusion protection.

As clearly articulated in the CCKA letter:

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 Geosyntec 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.

It is clear from the recent responses to the Regional 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 Geosyntec 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.” See CCKA letter at page 15.

Response to Comment R4RD-58

For a discussion of seawater intrusion and the Talbert Barrier, see Response to Comment R4RD-23. In addition, R4RD ignores its own emphasis to a portion of Poseidon’s response that bears on the feasibility analysis: **“If pumping from the subsurface intakes has the potential to alter groundwater flow to freshwater aquifers and wells, then the intake may need to either be relocated or flow rates reduced so existing aquifers are not affected.”** Even if subsurface intakes would not contribute to or exacerbate seawater intrusion in the Talbert Aquifer, subsurface intake pumping has the potential to alter groundwater flow to freshwater aquifers and wells.

Comment R4RD-59

Second, we agree with the State Board staff report cited by Poseidon that “need must be anticipated.” As stated above, Poseidon has failed to identify the discrete need for 50mgd.

Response to Comment R4RD-59

For a discussion of project need, see Responses to Comments R4RD-1 and R4RD-3.

Comment R4RD-60

Third, we agree with State Board staff report cited by Poseidon that “additional tests” are “necessary to assess the potential impacts under a range of pumping rates.” In fact, the “additional tests” should include collection of data to improve confidence in the computer modeling as recommended by HydroFocus, additional studies on how the seawater intrusion injection rates may be reduced to complement the slant wells, as well as alternatives for ensuring adequate replenishment through alternative injection options and/or changes in the barrier injection necessary to accommodate foreseeable changes to withdrawals by coastal communities anticipated in the draft OCWD-Poseidon distribution plans.

Response to Comment R4RD-60

R4RD misconstrues the State Board’s language in the Draft staff report: “[a]dditional studies *may* be necessary.” (See Draft SED Staff Report, pp. 190-191.) Given the extensive data and information on potential impacts of subsurface intakes on groundwater in the Project area, additional studies—such as a test slant well—are not necessary. See Responses to Comment R4RD-20 and R4RD-22 for additional discussion on the sufficiency of the existing groundwater data and modeling.

Comment R4RD-61

Poseidon then cites the Staff Report finding:

- iii. *A key factor to consider in siting subsurface intakes is the potential for the subsurface well to contribute to or exacerbate seawater intrusion problems. Seawater intrusion can irreversibly contaminate freshwater supplies, negating the*

benefit of the desalination facility's ability to produce potable water. (OPA Staff Report, p. 72.)

Again, there is no evidence that slant wells at this site or nearby sites would “contribute to or exacerbate seawater intrusion.” In fact, all the evidence submitted to date suggests that slant wells will improve defenses against seawater intrusion, not “contribute to or exacerbate seawater intrusion problems.” Further, without additional studies and information, it is premature to conclude that the current injection of freshwater into the seawater intrusion barrier cannot be successfully adjusted to limit the volume of inland groundwater mixing with the seawater intake once slant wells contribute to the defense. And as stated above, until OCWD completes their distribution plans for the desalination product water, including the alternative of coastal agencies reducing extraction from coastal wells in return for direct supply of the desalination product water, it is premature to accept OCWD's stated objection to any alteration of the volume of water injected into the barrier.

Response to Comment R4RD-61

For a discussion of seawater intrusion and the Talbert Barrier, see Response to Comment R4RD-23. For a discussion of how test slant wells are not required under the Desalination Amendment or Water Code, see Response to Comment R4RD-20.

Comment R4RD-62

CONCLUSION

The consideration of “economic feasibility” is inherently linked to both sufficient evidence of “need” and “technical feasibility” discussed above.

Poseidon and OCWD appear to interpret the OPA in a way that allows the project applicants the discretion to define “need” and “technical feasibility.” As we have noted throughout these comments, the OPA requires “sufficient” evidence of need and technical feasibility before the Regional Board can allow an exception to the mandate to use subsurface intakes. That sufficient evidence is missing, and consequently an adequate economic analysis is also missing. And importantly, an economic analysis of the life-cycle cost savings of slant wells for avoided construction and operation of full conventional pre-treatment would include the environmental benefits of avoided chemical discharges from unnecessary pre-treatment.

Response to Comment R4RD-62

Contrary to R4RD's assertions, Poseidon and OCWD are not dictating the Regional Board's interpretation of “need” and “technical feasibility.” Poseidon is simply providing the Regional Board with sufficient information necessary for the Regional Board to conduct its required analyses under the Desalination Amendment and Water Code section 13142.5(b). See also Response to Comment R4RD-25 regarding Poseidon's responsibilities under the Desalination Amendment.

In addition, as explained above, the extensive analyses of subsurface intake feasibility have addressed R4RD's purported deficiencies related to groundwater modeling data gaps (Response to Comment R4RD-22); purported cost savings associated with the elimination of pretreatment of water (Response to Comment R4RD-44); and the infeasibility of slant wells (Responses to Comment R4RD-43 and R4RD-49).

Comment R4RD-63

The Regional Board must not be distracted by citations to State Board Staff Reports taken out of context. Poseidon's response to the CCKA letter and reports is largely irrelevant and self-serving.

Response to Comment R4RD-63

Poseidon's responses are not self-serving, irrelevant, or mischaracterizations of the State Board's Staff Report for the Desalination Amendment. The State Board's SED provides important context and background to aid the Regional Board in applying the Desalination Amendment, and are therefore relevant and should be considered by the Regional Board.

Comment R4RD-64

Finally, R4RD has a somewhat different perspective on the economic feasibility of the proposed project than that provided in the Hanneman Report. We agree with the conclusions that an economic analysis must be objective and based on sound economic principles – not the desires or self-serving objections of the project proponents. But we would add that our participation in the project analyses since Poseidon first proposed the facility includes the observation that the estimated cost of the water has dramatically increased since 2000, and the value of a so-called “reliability premium” has dramatically decreased. Given that history, it is somewhat ironic that OCWD would refuse to consider an incremental increase in cost for the development and operation of subsurface intakes – especially given that more detailed technical and economic analyses for the Doheny and Monterey projects showed significant cost savings from eliminating the need for conventional pre-treatment required for the proposed screened open ocean intake.

Response to Comment R4RD-64

R4RD's understanding of the economic infeasibility of subsurface intakes is incomplete. First, in 2012, the Regional Board conducted a Water Code section 13142.5(b) compliance determination and found the estimated cost of constructing and operating subsurface intakes at the HBDP site rendered subsurface intakes economically infeasible compared to ocean intakes. ISTAP then evaluated the economic feasibility of subsurface intakes (*e.g.*, subsurface infiltration galleries (“SIG”)) in its Phase 2 report. ISTAP evaluated a wide range of considerations including: life cycle cost analysis; cost of product water (“willingness to pay”); whether project revenues would cover costs; ability to secure project financing; Poseidon's willingness to proceed given the SIG's economic disparities; and whether the SIG could be successfully accomplished in a reasonable period of time. (Appx. G, p. 9.)

The Desalination Amendment states that “[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. In addition, the regional water board may evaluate other site- and facility-specific factors.” (Ocean Plan, Ch. III.M.2.d.(1)(a)(i).)

R4RD is also misinformed about the operational cost savings associated with the slant well technology. See Response to Comment R4RD-44 regarding ISTAP’s analysis of potential cost savings from the elimination of water pretreatment.

The ISTAP Phase 2 report found that using subsurface intakes, like slant wells, at the HBDP site, would not result in “significant cost savings from eliminating the need for conventional pretreatment.” Specifically, the ISTAP Phase 2 report found:

For the SIG alternative, pretreatment requirements would be reduced due to some removal of naturally occurring fouling agents in the SIG filter layer. This eliminates the capital and O&M costs for the coagulation/filtration process. However, to maintain membrane effectiveness and hydraulic capacity, an ultrafiltration [] membrane pretreatment process will be required.

(Appx. G, pp. 10-11.) As such, ISTAP concluded that “[t]he SIG option 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.” (*Id.*, p. 18.)