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HUNTINGTON BEACH DESALINATION PLANT RESPONSE TO REQUEST FOR INFORMATION REGARDING ENVIRONMENTAL ANALYSIS OF THE 2018 DIFFUSER MODIFICATIONS

To:	Josie McKinley, Poseidon Water
From:	Joe Monaco, Dudek Caitlin Munson, Dudek
Subject:	Huntington Beach Desalination Plant Response to Request for Information Regarding Environmental Analysis of the 2018 Diffuser Modifications
Date:	November 27, 2018
Attachment(s):	Appendix A: Bracketed California State Lands Commission Letter: Proposed Diffuser Change, Poseidon Huntington Beach (PRC 1980.1) Appendix B: November 2018 Huntington Beach Desalination Plant 2018 Diffuser Modifications Environmental Analysis

The Santa Ana Regional Water Quality Control Board ("Regional Board") requested that Poseidon consider redesigning the proposed brine diffuser based on the analysis found in an April 18, 2018 report entitled Brine Diffusers and Shear Mortality: Application to Huntington Beach prepared by Philip J. W. Roberts, PhD, PE.

Based on this request, the *Huntington Beach Desalination Plant 2018 Diffuser Modifications Environmental Analysis* was prepared in August 2018. The analysis evaluated the potential for new significant or substantially more severe environmental impacts pursuant to the California Environmental Quality Act (CEQA) (Section 15162) and associated with changes to the Huntington Beach Desalination Plant's (HBDP's) diffuser compared to the Lease Modification Project previously analyzed in the Final Supplemental EIR for the Poseidon HBDP (2017 Supplemental EIR) approved by the California State Lands Commission (Commission or CSLC) in 2017 and, where applicable, to the HBDP analyzed in the Subsequent Environmental Impact Report (2010 Subsequent EIR) for the Seawater Desalination Project at Huntington Beach approved by the City of Huntington Beach in 2010.

The following memorandum provides responses to the California State Lands Commission (Commission) comment letter, dated September 25, 2018, which was drafted in response to *the*

Huntington Beach Desalination Plant 2018 Diffuser Modifications Environmental Analysis (Alden 2018). Please find the bracketed comment letter attached as Appendix A.

RESPONSE TO COMMENTS

1. It is understood that the Commission requires additional information to assess if the proposed diffuser modifications would be covered in the existing Subsequent EIR (2010) and Supplemental EIR (2017). Please find specific comments addressed in Response to Comments 1 through 13 below. Please also refer to the revised November 2018 *Huntington Beach Desalination Plant 2018 Diffuser Modifications Environmental Analysis*. See Appendix B. Changes to the August 2018 analysis are presented in strikethrough text (~~strikethrough~~) signifying deletions and underlined text (<u>underline</u>) signifying additions.

2. In response to the Commission staff's inquiry, regarding the location of the diffuser lying outside of the lease area, Poseidon has re-aligned the 14-port linear diffuser with the existing tower, which lies within the lease area. Poseidon understands that the revised diffuser design requested by the Regional Board will require an amendment to the lease approved by the State Lands Commission in October 2017. Poseidon plans to seek that amendment after the Regional Board approves the final diffuser design.

3. Approximately 200 to 300 cubic yards of ocean floor would be levelled as part of the placement of the modified diffuser. No ocean floor sediment would be disposed on land. The ocean floor sediment would be side-cast. The area of disturbance would be approximately 226 feet by 20 feet, including a portion of the existing discharge tower riprap area.

The placement of the modified diffuser would not require dredging. Therefore, the diffuser modifications would not contribute to an additional volume of dredged sediments. Further, because dredging would not occur and all ocean floor sediment would be side-cast, no additional barge or tug boat trips are required to accommodate the placement of the modified diffuser. However, as discussed further in Response to Comment 9, one additional tug boat trip would be required to accommodate the increase in riprap associated with the modified diffuser.

This information is clarified in Section 2, Project Description; Section 3.1, Air Quality, Diffuser Modifications Analysis; Section 3.2, Marine Biological Resources, Diffuser Modifications Analysis; Section 3.3, Greenhouse Gas Emissions, Diffuser Modifications Analysis; Section 3.4, Hydrology and Water Quality, Diffuser Modifications Analysis; of the revised November 2018 *Diffuser Modifications Environmental Analysis.*

4. The approximate limits of riprap are shown in the Preliminary Brine Discharge Linear Diffuser Drawing and Comparison of Existing Discharge Tower Footprint, 2017 SEIR Diffuser Footprint and Proposed 14 - Port Linear Diffuser Footprint Schematic , attached as Appendix B- Figures 1 & 2. These figures show the limits of riprap placement relative to the linear diffuser pipeline, and the existing discharge tower.

5. The construction work to install the modified diffuser and the construction work to install the original diffuser (as proposed in the 2017 Supplemental EIR), would both take 1 to 2 months. The timeframe for construction as evaluated in the August 2018, and the November 2018 analysis is the same as the 2017 Supplemental EIR. The August and November 2018 analysis provide a conservative analysis by assuming that both the intake and discharge components would be constructed at the same time; although it is possible these activities would not be simultaneous. If these activities were not simultaneous, then the maximum daily emissions would be lower than what was estimated in the August and November 2018 analysis.

6. On October 22, 2018, Dudek completed a search of the California Historical Resources Information System at the South Central Coastal Information Center (SCCIC), located on the campus of California State University, Fullerton, of the modified diffuser area and a 0.5-mile (804 feet) record search area. This search included mapped prehistoric, historical, and built-environment resources; Department of Parks and Recreation (DPR) site records; technical reports; archival resources; and ethnographic references. Additional consulted sources included historical maps of the project site, the National Register of Historic Places, the California Register of Historic Resources, the California Historic Property Data File, and the lists of California State Historical Landmarks, California Points of Historical Interest, and the Archaeological Determinations of Eligibility, when available at the SCCIC.

Results of the cultural resources records search indicated that 3 previous cultural resource studies have been conducted within the records search area between 1987 and 2013. None of the previously conducted cultural resource studies intersects the modified diffuser site. All three studies are summarized below in Table 1.

Table 1. Previous Technical Studies Within 0.5-miles of the Project Site

SCCIC Report No.	Authors	Date	Title	Proximity to Project Site
OR-02033	Mason, Roger D.	1987	Research Design for Evaluation of Coastal Archaeological Sites in Northern Orange County, California	Outside; 0.5 miles northeast
OR-02456	Hoover, Anna M.	2000	Cultural Resources Literature and Records Review for the Southeast Coastal Industrial Area Redevlopment Project, Huntington Beach, California	Outside; 0.5 miles northeast
OR-04313	Unknown	2013	Historic and Cultural Resources Element - Huntington Beach	Outside; 0.5 miles northeast

The results of the record search did not identify any cultural resources within the modified diffuser site according to a review of available mapped prehistoric, historical, and built-environment resources; Department of Parks and Recreation (DPR) site records; technical reports; archival resources; and ethnographic references. As a result of this study, it is the opinion of Dudek that the proposed design modifications to the diffuser would not result in any additional impacts to the cultural resources as compared to the 2017 SEIR.

Additionally, the revised diffuser modification design footprint would occur within the existing lease area. As described in the 2017 SEIR, an outreach letter was sent to the Tribes listed in the Native American Contacts List, which was provided by the Native American Heritage Commission. In this outreach letter, a map of the existing lease area was provided. Because the diffuser modifications would occur within the existing lease area, and no new impacts associated with the diffuser modifications would occur, additional outreach to Tribes is not warranted.

7. The derrick barge and tug boat trip required to transport the preassembled linear diffuser was evaluated in the 2017 Supplemental EIR and does not constitute new trips, because the 2017 EIR already assumed the transportation of the diffuser via tug boat and barge to the construction area. The 77-foot long utility boat required for personnel access for the modified diffuser was already evaluated in the 2017 Supplemental EIR and does not constitute new trips.

8. As stated in Response to Comment 3, no dredging would occur as part of the installation of the modified diffuser. Approximately 200 to 300 cubic yards of ocean floor would be levelled as part of the placement of the modified diffuser. No ocean floor sediment would be disposed on land. The ocean floor sediment would be side-cast. Therefore, this activity would not require additional barge and tug boat trips.

This information is clarified in Section 2, Project Description; Section 3.1, Air Quality, Diffuser Modifications Analysis; Section 3.3, Greenhouse Gas Emissions, Diffuser Modifications Analysis; of the revised November 2018 *Diffuser Modifications Environmental Analysis* (Appendix B).

9. As stated in Response to Comment 3, no dredging would occur as part of the installation of the modified diffuser. One additional tug boat trip, and associated haul truck trips, would be required to accommodate the increase in riprap associated with the modified diffuser. In addition to the tug boat trip and haul truck trips, the installation of the diffuser would also require the operation of a utility boat. The hours of operation of the utility boat used for the diffuser modifications would not vary from the hours of operation assumed for the diffuser installation in the 2017 Supplemental EIR.

Although the diffuser modifications would require approximately 200 to 300 cubic yards of side-casted ocean floor sediment from levelling of the seabed from what was analyzed for the diffuser installation in the 2017 Supplemental EIR, the 2017 EIR assumed that 1,000 to 3,300 cubic yards of material would be excavated and side-cast for the installation of the wedgewire screen. However, the amount of excavated and side-casted materials required for the installation of the wedgewire screen were overestimated in the 2017 Supplemental EIR. Therefore, the hours of operation of the derrick barge crane associated with the placement of the modified diffuser and the actual hours of operation of the derrick barge crane associated with the installation of the wedgewire screen, when totaled, would not result in additional hours of operation of the derrick barge crane or exceed the emissions estimated in the 2017 Supplemental EIR.

The emissions associated with one additional tug boat trip and the haul truck trips were added to the typical daily construction emissions from the 2017 Supplemental EIR to provide a "worst-case scenario." The August and November 2018 analysis provides a conservative analysis by assuming that both the intake and discharge components would be constructed at the same time; although it is possible these activities would not be simultaneous. If these activities were not simultaneous, then the maximum daily emissions would be lower than what was estimated in the August and November 2018 analysis.

The inclusion of a new CalEEMod analysis for offshore construction activities is not recommended. This is because the offshore construction activities associated with the diffuser modifications would not vary from the diffuser installation scenario that was analyzed in the 2017 Supplemental EIR. The one exception to this is the additional tug boat trip associated with the transport of additional riprap for the diffuser modifications. As stated above, the emissions associated with one additional tug boat trip were added to the typical daily construction emissions from the 2017 Supplemental EIR to provide a "worst-case scenario."

10. The revised Alden Brine Discharge Linear Diffuser construction drawing shows the approximate riprap footprint length as 226 feet and the length of the linear diffuser pipeline and the existing discharge tower as 208 feet (see Figure 1 of Appendix B). Therefore, the *August 2018 Diffuser Modifications Environmental Analysis* assumptions have been revised accordingly in the November 2018 analysis. The August 2018 analysis assumed that the riprap footprint would be approximately 212 feet long and the length of the linear diffuser pipeline is 194 feet long, consistent with the original Alden Brine Discharge Linear Diffuser construction drawings.

11. The HBDP will no longer be built for a co-located operation with Huntington Beach Generating Station operational. Since the 2017 SEIR, Poseidon has learned that AES will decommission one of the condenser units requiring a flow rate of not more than 127 MGD. The discharge tower will no longer have a concrete cap with a central port.

12. No additional vessels would be required to accommodate the construction of the modified diffuser. Therefore, no additional tug boats or barges would be added to the area of disturbance. The August and November 2018 analysis states that there would be no increase in the area of temporary benthic disturbance due to the anchoring of marine vessels, because the diffuser modifications would not require additional tug boats or barges. Additionally, the tug boat anchor would be confined to the same general areas that were analyzed in the 2017 Supplemental EIR analysis.

13. Thank you for your comments. Please refer to the revised November 2018 *Huntington Beach Desalination Plant 2018 Diffuser Modifications Environmental Analysis*. Changes to the August 2018 analysis are presented in strikethrough text (~~strikethrough~~) signifying deletions and underlined text (<u>underline</u>) signifying additions.

APPENDIX A

California State Lands Commission Letter: Proposed Diffuser Change, Poseidon Huntington Beach (PRC 1980.1)

Santa Ana Regional Water Quality Control Board

September 27, 2018

Mr. Scott Maloni
Vice President
Poseidon Water
5780 Fleet Street, Suite 140
Carlsbad, CA 92008

smaloni@poseidonwater.com

Request for Information Regarding Environmental Analysis of the 2018 Diffuser Modifications

Dear Mr. Maloni:

The Santa Ana Regional Water Board received the attached letter dated September 25, 2018 from the California State Lands Commission (Commission) concerning Poseidon Water's revised diffuser design for the Proposed Huntington Beach Desalination Facility. In the letter, the Commission asks for additional information concerning the potential environmental impact of the revised diffuser design. Please review the Commission's letter and provide the information requested.

If you have any questions, please contact Lauma Willis at Lauma.Willis@waterboards.ca.gov or Mark Smythe at Mark.Smythe@waterboards.ca.gov.

Sincerely,

Hope A. Smythe
Executive Officer

cc w/o attachment:
Cy R. Oggins, California State Lands Commission
Alexandra Borack, California State Lands Commission
Eric Gillies, California State Lands Commission
Cheryl Hudson, California State Lands Commission
Claire Waggoner, State Water Resources Control Board
Tom Luster, California Coastal Commission
Teresita Sablan, State Water Resources Control Board
Lauma Willis, Santa Ana Regional Water Quality Control Board
Mark Smythe, Santa Ana Regional Water Quality Control Board

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September 25, 2018

Hope Smythe, Executive Officer
Santa Ana Regional Water Quality Control Board
3737 Main Street, Suite 500
Riverside, CA 92501-3348

VIA REGULAR & ELECTRONIC MAIL (Hope.Smythe@waterboards.ca.gov)

Subject: Proposed Diffuser Change: Poseidon Huntington Beach (PRC 1980.1)

Dear Ms. Smythe:

California State Lands Commission (Commission) staff has received and reviewed Alden's "14-port Diffuser Design" and Dudek's "Diffuser Modifications Environmental Analysis" (Dudek Memo) documents that Poseidon (Applicant) sent on August 3, 2018 to the Regional and State Water Boards (Water Boards) as part of the Water Code Section 13142.5(b) determination process. In reviewing these documents, Commission staff has identified several areas where additional information is needed to adequately analyze the modified diffuser design. Commission staff has drafted this letter to provide initial recommendations to the Water Boards regarding additional information that must be included in the Water Boards' California Environmental Quality Act (CEQA) analysis for the Commission to rely upon the document for its own decision-making process.

On October 19, 2017, the Commission certified the Supplemental Environmental Impact Report (EIR) and approved the Lease Modification Project, excepting out the proposed diffuser until it was determined to be acceptable by the Water Boards. The Supplemental EIR evaluated, among other activities, the impacts associated with the construction and operation of a 3-port diffuser that would be attached to the existing outfall riser. The Supplemental EIR also evaluated a 6-port diffuser design as an alternative to the Lease Modification Project. The August 3, 2018 transmittal to the Water Boards sets forth a proposed design change: a linear diffuser with a 212-foot-long pipe laid on the ocean floor, set with 14 ports, and attached to the existing outfall riser via a 24-foot-long bent pipeline. The proposed diffuser represents a potentially major change from both the diffuser approved by the Commission and the alternative analyzed in the Supplemental EIR. If the Water Boards do not adequately identify, discuss, and if needed, mitigate the potential new impacts of the modified diffuser then the Commission may not be able to use the Subsequent EIR (2010), the Supplemental

1

EIR (2017), and the Water Boards' CEQA document to fully evaluate a lease amendment application, which will be required for the diffuser. From our initial review, Commission staff has identified potential new impacts that should be thoroughly analyzed and recommends that, in addition to the impacts identified by Dudek in their memo, the Regional Water Quality Control Board include the following in its CEQA document: 1

Project Activities/Impacts

The Supplemental EIR evaluated a diffuser design that placed the three ports on top of the existing outfall tower and expanded the riprap footprint around the structure. This design fell within the existing Commission lease area. Commission staff understands that the new diffuser design will set the linear diffuser away from the existing outfall tower. Please have the Applicant provide design drawings that show the revised design relative to the existing lease area. Any portion of the new design that extends beyond the existing land description must be included in the Applicant's lease amendment. 2

The diffuser design change would require the "top several feet" of the ocean floor to be dredged,[1] and the excess material would be side-casted if possible. The Dudek Memo does not approximate the cubic yards of material that would be either allowed to settle naturally on the ocean floor or, if necessary, loaded onto barges and towed back to the Port of Long Beach. Both dredging activities will require Commission authorization and a lease amendment. Please have the Applicant clarify the volume of dredged sediments that could be moved as well as the maximum area of disturbance by dredging activities. Without this information, Commission staff cannot agree that the additional volume of dredged sediments and potential associated barge trips "would not substantially change with the new linear diffuser modifications."[2] 3

In addition, the diffuser design modification results in a different riprap footprint from what was evaluated in the Supplemental EIR. It appears that the current riprap located on the seaward side and half of the adjacent side of the diffuser tower would be removed and later placed around the linear diffuser, but that there would be no riprap replaced around the outfall tower,[3] also shown in the footprint in Figure 2 of the Dudek Memo. The Supplemental EIR only showed a general outline of the new riprap footprint, but this was because the existing tower would simply be centered within an expanded area. The new diffuser design seems to propose a different riprap configuration around the tower, and Commission staff requests that the Applicant provide the Water Boards with a more detailed figure that identifies the outfall tower, the connecting pipeline, and the linear diffuser locations within the riprap footprint. 4

Finally, the construction work to install the diffuser is estimated to take 1 to 2 months. Please clarify whether this diffuser work for the modified design would occur during the same timeframe as that evaluated in the Supplemental EIR, or whether there are new periods of overlap with the wedgewire screen activities for the intake. 5

[1] Dudek Memo, page 5.
[2] Dudek Memo, page 2.
[3] Dudek Memo, pages 2-3.

Cultural/Tribal Cultural Resource Impacts

The Dudek analysis fails to provide any discussion regarding new potential impacts to submerged cultural or tribal cultural resources. The Supplemental EIR noted, for the wedgewire screen construction on the intake, that although dredged sediments were likely disturbed when the intake structure was initially installed, all ground disturbing activities that extend more than 3 feet below the ground surface have the potential to cause adverse direct and indirect impacts to presently unidentified cultural and tribal cultural resources. While the impacts for the linear diffuser dredging would be similar to those evaluated and mitigated for in the Supplemental EIR, the wedgewire screen pipeline extended no more than 54 feet (parallel to the shoreline) from the intake tower.[4] The proposed linear diffuser appears to extend more than 100 feet offshore from the outfall tower and into areas that may not have been initially disturbed during power plant pipeline and tower construction. Regional Water Board staff should both notify Native American tribes of these potential new impacts and evaluate the level of significance: please see pages 4-110 through 4-111 of the Supplemental EIR for a list of tribes who were contacted pursuant to the NAHC Native American Contacts List. 6

Air Quality/Greenhouse Gas Emissions

Page 3 of the Dudek Memo indicates that construction would involve the "same marine vessels operating at a similar frequency" to what was analyzed in the Supplemental EIR. The memo goes on to state that crew and supply vessels would be "operated the same as analyzed in the 2017 Supplemental EIR" but with additional trips needed for crew and supplies. Table 1 of the Dudek Memo, however, assumes that only one additional tug boat and barge roundtrip (in addition to 26 haul trips) will be used for the linear diffuser installation. Please clarify whether the following include vessels already evaluated in the Supplemental EIR (and where the activity would fit in the construction schedule), or whether they will constitute new round trips: 7

- Page 2: one derrick barge to bring the pre-assembled linear diffuser
- Page 4: one 77-foot long utility boat for personnel access

In addition, please have the Applicant clarify the additional number of barges that would be required (compared to those already evaluated in the Supplemental EIR) if the dredged sediments require disposal in a land-based facility, and also have Dudek confirm whether the additional barges that could be required for land-based disposal are already included the CalEEMod calculations found in Appendix A as part of the "worst case scenario" (that should be evaluated under CEQA). Table 1 includes only one tug boat trip for additional riprap, yet page 12 of the Dudek Memo reiterates that excess sediment could be placed on support barges and towed to the Port of Long Beach. 8

Commission staff does not believe that Table 1 from the Dudek Memo clearly shows the change in emissions, for a worst-case scenario, from what was analyzed in the Supplemental EIR. First, the table only provides calculations for one additional tug boat round trip, and it is not clear whether additional vessels will be required for the diffuser 9

[4] Figure 2-7b, page 2-16, 2017 Supplemental EIR.

area dredging. In addition, the narrative does not explain why the additional emissions were simply added to the "typical daily construction emissions from the 2017 Supplemental EIR". The Supplemental EIR analyzed 73.85 lbs/day as the maximum emissions that could occur with concurrent wedgewire screen and diffuser construction. To provide a clear comparison between the maximum construction emissions calculated in the Supplemental EIR and those that would occur for the Lease Modification Project with the new diffuser design, the Applicant should provide a new CalEEMod analysis that includes all of the offshore construction activities (with the new diffuser) in a similar format to that presented in the Supplemental EIR, clearly noting any change in model parameters or assumptions. Without this new analysis, Commission staff is unable to determine how the Applicant has concluded that "...the maximum daily construction NO_x emissions from construction of the new linear diffuser would be the same as those analyzed for the Lease Modification Project (occurring during the last day of dredging)."[5] Once there is sufficient information to make a comparison, Commission staff expects Water Board staff to determine whether the appropriate threshold[6] should be the maximum emissions calculated in the Supplemental EIR, the SCAQMD air emissions threshold, or whether a different threshold should be applied. 9

Minor Notes/Corrections

1. Page 2 of the Dudek Memo states that the linear diffuser pipeline will be approximately 194 feet. The Alden design shows 212 feet. Please ensure that the impacts are evaluated with the full 212 feet of pipeline. 10
2. The Supplemental EIR evaluated a possible co-located operations scenario which required a 54-inch central port, to be closed later once stand-alone operations commenced.[7] Please clarify whether the new concrete cap would have the central port and under what circumstances it would be sealed. 11
3. Page 3 of the Dudek Memo notes that the Anchoring Plan, included as an Applicant Proposed Measure from the Supplemental EIR, would also need to include "the potential anchoring of the tug boat." Please clarify how many additional vessels, including both tug boats and barges, will be added to the area of disturbance. Page 12 of the document further states that there would be no increase in the area of temporary benthic disturbance due to the anchoring of marine vessels. Please have the Applicant explain why there would be no increase in the vessel anchor impact area. 12

Commission staff greatly appreciate your efforts to include this additional information in your analysis of the modified diffuser design. While these recommendations are only our initial response to the information currently available, these clarifications will greatly assist the Commission in its future review. 13

[5] Dudek Memo, page 9. Commission staff notes that Table 1 does not show any values to support this statement, because there is no clear calculation for the last day of dredging and no clarification as to when the new diffuser installation would occur.

[6] CEQA Guidelines section 15162 subdivision (a)(3)(B): "Significant effects previously examined will be substantially more severe than shown in the previous EIR."

[7] 2017 Final Supplemental EIR, page 2-19.

Please refer questions concerning environmental review to Alexandra Borack, Environmental Scientist, at (916) 574-2399 or via email at Alexandra.Borack@slc.ca.gov. For questions concerning Commission leasing jurisdiction, please contact Cheryl Hudson, Public Land Management Specialist, at (916) 574-0732 or via email at Cheryl.Hudson@slc.ca.gov.

Sincerely,

For Cy R. Oggins, Chief
Division of Environmental Planning
and Management

cc: C. Waggoner, State Water Resources Control Board
T. Luster, California Coastal Commission
C. Hudson, Commission
P. Griggs, Commission
J. Garrett, Commission
A. Borack, Commission

APPENDIX B

November 2018 Huntington Beach Desalination Plant 2018 Diffuser Modifications Environmental Analysis

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HUNTINGTON BEACH DESALINATION PLANT 2018 DIFFUSER MODIFICATIONS ENVIRONMENTAL ANALYSIS

To:	Josie McKinley, Poseidon Water
From:	Joe Monaco, Dudek Austin Melcher, Dudek Caitlin Munson, Dudek
Subject:	Huntington Beach Desalination Plant 2018 Diffuser Modifications Environmental Analysis
Date:	~~August 3~~November 27, 2018
Attachment(s):	Appendix A: Air Quality and Greenhouse Gas Calculations Appendix B: Figures

1 INTRODUCTION AND BACKGROUND

The Santa Ana Regional Water Quality Control Board ("Regional Board") has requested that Poseidon consider redesigning the proposed brine diffuser based on the analysis found in an April 18, 2018 report entitled Brine Diffusers and Shear Mortality: Application to Huntington Beach prepared by Philip J. W~~.~~ Roberts, PhD, PE. On August 3, 2018, Poseidon submitted the diffuser modification designs. On September 25, 2018, the Regional Board received a letter from the California State Lands Commission (Commission) concerning the revised diffuser design. The Supplemental EIR evaluated a diffuser design that placed the three ports on top of the existing outfall tower and expanded the riprap footprint around the structure. This design fell within the existing Commission lease area. Commission staff understands that the new diffuser design will set the linear diffuser away from the existing outfall tower. In response to the Commission staff's inquiry, Poseidon has re-aligned the 14-port linear diffuser with the existing tower which lies within the lease area.

This analysis evaluates the potential for new significant or substantially more severe environmental impacts pursuant to the California Environmental Quality Act (CEQA) (Section 15162) and associated with changes to the Huntington Beach Desalination Plant's (HBDP's) diffuser compared to the Lease Modification Project previously analyzed in the Final Supplemental EIR for the Poseidon HBDP (2017 Supplemental EIR) approved by the California State Lands Commission (Commission or CSLC) in 2017 and, where applicable, to the HBDP analyzed in the Subsequent Environmental Impact Report (2010 Subsequent EIR) for the Seawater

Desalination Project at Huntington Beach approved by the City of Huntington Beach in 2010. This analysis evaluates the new linear diffuser on the following topics:

- Air Quality
- Marine Biology
- Greenhouse Gas Emissions
- Hydrology and Water Quality
- Noise
- Recreation
- Marine Transportation

Any topics not included in this analysis would not be substantially different than the impacts identified in the 2017 Supplemental EIR and the 2010 Subsequent EIR.

2 PROJECT DESCRIPTION

Diffuser Design Modifications

The new 14-port~~linear~~ diffuser design would incorporate 2 7-port~~a~~ linear diffuser sections connected to the seaward and shoreward sides of the existing discharge tower. ~~arrangement. which would be placed immediately adjacent to the existing discharge tower.~~ The linear diffuser would consist of a 4-foot diameter pipe header ~~approximately 194 feet long~~ equipped with fourteen (14) duck-bill type check valves (ports). The new linear diffuser ~~would be connected to the existing concrete tower (seaward side of the tower) with a 6.5 foot diameter pipeline approximately 24 foot long and~~ would be placed directly on the seabed on concrete pipe saddles that would secure the pipe. Riprap would be placed around the pipes to avoid scour under the diffuser. The linear diffuser would be oriented perpendicular to the shore to minimize wave loading forces on the diffuser. The existing discharge tower and the 14-port linear diffuser would be approximately 208 feet long. The existing discharge tower, the linear diffuser and the riprap area will be approximately 226 feet long. See Figure 1 – Preliminary Brine Discharge Linear Diffuser ~~Design~~.

The existing concrete discharge tower (approximately 25 feet x 20 feet) is surrounded by riprap on all sides which extends approximately 20 feet from the existing concrete tower. The riprap on the seaward and ~~half of the downcoast~~ shoreward sides of the existing structure would be removed and side-cast away from the structure and would be later re-used for scour protection~~.~~. After the riprap is removed, approximately 200 to 300 cubic yards of the seabed will be ~~dredged and~~ levelled. Excess material will be side-cast. As stated in the 2017 Supplemental EIR, any excavated

suspended sediments would ~~likely~~ be redistributed by ocean currents. ~~and if excess material cannot be re-used or relocated on the ocean floor, it will be loaded on support barges and taken to the Port of Long Beach for disposal in an appropriate land based facility. The potential land disposal of ocean floor sediment that might not redistribute by the natural ocean currents was previously evaluated in the 2017 Supplemental EIR and would not substantially change with the new linear diffuser modifications.~~ A 5 to 6 foot hole will then be cut into the seaward and shoreward sides of the tower using a combination of core drilling and wire sawing. The existing screen on top of the existing concrete structure would be removed and replaced with a solid concrete cap that will be secured to the existing concrete tower.

Concrete saddles will then be placed on both sides of the tower, in the areas that were~~as~~ levelled to secure the linear diffuser. The linear diffuser would be pre-assembled and would be placed using a derrick barge in ~~one piece~~ onto the saddles. ~~Connecting pipework (approximately 5 to 6 feet diameter piping) would then be secured to~~ The linear diffuser ~~on one end and~~ would then be placed through the holes in the existing concrete structure. The void between the outside of the diffuser header~~connecting pipework~~ and the existing concrete structure would be filled using concrete (either by forming a pourback with underwater forms or by placement of grout bags. The linear diffuser would then be secured to the concrete saddles using saddle anchor straps or concrete anchor blocks. The side-casted riprap would then be replaced around the linear diffuser.

The linear diffuser riprap area would occupy an area of approximately 226~~12~~ feet by 20 feet, including a portion of the existing discharge tower riprap area, and would also require temporary removal of the riprap on two~~one and a half~~ sides of the existing discharge tower (which would be reused to protect the structure~~diffuser~~). This would result in a decrease in the area footprint (including the protective riprap) of approximately 7593~~4~~ square feet from approximately 7,134 square feet for the Lease Modification Project diffuser footprint analyzed in the 2017 Supplemental EIR to approximately 6,375~~400~~ square feet footprint for the new linear diffuser, existing discharge tower and riprap area. See Figure 2 - Huntington Beach Desalination Project Discharge Structure Layout Schematic~~Comparison of Existing Discharge Tower Footprint, 2017 SEIR Diffuser Footprint and Proposed 14 - Port Linear Diffuser Footprint Schematic~~.

Construction Vessels

Construction of the new linear diffuser would involve the same marine vessels operating at a similar frequency as analyzed in the 2017 Supplemental EIR for the Lease Modification Project. As a result, construction of the new linear diffuser would entail use of a similar set of construction vessels as analyzed in the 2017 Supplemental EIR.

Crew and supply vessels would be operated the same as analyzed in the 2017 Supplemental EIR, traveling from the Port of Long Beach or closer harbors (e.g., Newport Harbor, Los Alamitos) to

the construction area. This includes boats used to shuttle workers between the port and work site daily, with additional trips may be needed to deliver equipment and supplies.

Anchoring

Similar to the Lease Modification Project analyzed in the 2017 Supplemental EIR, anchoring is required to ensure that the construction barge remain stationary. An Anchoring, Riprap Reconfiguration, and Dredging Plan and Preclusion Area Map (Anchoring Plan) was required as an Applicant Proposed Measures (APM) in the Lease Modification Project in the 2017 Supplemental EIR and would similarly be required to address the potential anchoring of the tug boat. The Anchoring Plan will identify and map all areas of kelp, seagrasses, and hard substrate found within the work area, which shall not be impacted by anchors, dragging anchor or buoy lines or cables, riprap, or leveling~~dredging spoils~~ during construction and maintenance.

Riprap Reconfiguration

Installation of the new diffuser will require moving and reconfiguring the existing riprap around the seaward and ~~half of the downcoast~~shoreward sides of the existing discharge ~~pipeline~~ tower. The riprap that currently surrounds the existing discharge ~~pipeline~~ tower would first be side-cast using a clam shell crane bucket from the derrick barge and later replaced around the new linear diffuser after installation. It is estimated that approximately 6~~4~~00 cubic yards of additional riprap may be needed to stabilize the new linear diffuser that was not previously analyzed in the 2017 Supplemental EIR. It is assumed this riprap would be transported from the Port of Long Beach by a single barge and tugboat near the end of diffuser installation.

~~The connecting piping from the existing discharge tower to the diffuser would occupy the same position as the existing riprap at the seaward and half of the downcoast side of the existing discharge tower.~~ As part of the Lease Modification Project analyzed in the 2017 Supplemental EIR, implementation of a Turbidity Minimization and Monitoring Plan as an APM would be required to address turbidity that would be generated during sea floor levelling and riprap reconfiguration. This APM would similarly apply to these aspects of construction of the new linear diffuser.

Installation of the Diffuser

The diffuser would be installed prior to, or concurrently with, the wedgewire screen intake, as analyzed for the Lease Modification Project in the 2017 Supplemental EIR. The diffuser system would be installed from an anchored derrick barge with a barge-mounted crane, moored above the tower during construction. Offshore work would be confined to the area ~~directly above~~ in the near vicinity of the existing discharge tower. Construction would take 1 to 2 months with work hours limited to between 7 a.m. and 6 p.m. to adhere to City's Municipal Code. Public access to the

offshore work area (about 1,500 feet offshore) would be prohibited during installation of the diffuser.

Personnel access would be provided on a daily basis by an approximately 77-foot-long utility boat. Onshore support vehicles at the selected port would be the same as those analyzed for construction of the Lease Modification Project in the 2017 Supplemental EIR and may include pick-up trucks, forklift, crane, and wheel loader. Construction crews and vessels would vary depending on the scope of work occurring each day, but would be the same as that analyzed for the Lease Modification Project in the 2017 Supplemental EIR:

- A day with lower activity levels would likely require approximately 13 crew members: 10 for the utility boat and three for a smaller (approximately 20 feet long) monitoring boat for marine mammal and turbidity monitoring.
- A day with higher activity levels may require as many as 23 crew members: 16 for a derrick barge; four for a tug boat; and three for the monitoring boat.

Installation of the diffuser may occur before, or concurrently with, the wedgewire screen intake installation. In either case, a similar set of vessels and crew will be required as analyzed in the 2017 Supplemental EIR.

The following steps describe the construction approach to install the new linear diffuser:

1. The riprap on the seaward and shorewardhalf of the downcoast sides of the existing concrete discharge tower would be removed and side-cast using a clam shell crane bucket from the derrick barge for reuse.
2. An area approximately 22612 feet by 20 feet, including a portion of the existing discharge tower riprap area, would be leveled for placement of the diffuser. The leveling process would entail removing the top several feetthe removal of marine sediments. The material removed would be side-cast and would likely be redistributed by natural ocean currents, as described in the 2017 Supplemental EIR.
3. A hole would be cut into the seaward and the shoreward sides of the existing concrete discharge tower (approximately 68 feet in diameter). Concrete pieces from the holes would be placed on the deck of the barge and would be disposed of in an appropriate land-based facility.
4. Concrete saddles would be positioned in the leveled area.
5. The new linear diffuser would be placed in one piece on the concrete saddles using the derrick barge.
6. The new linear diffuser would be secured by anchor straps or other similar methods.

~~7. The connecting piping from the new linear diffuser to the existing concrete tower will be secured to the diffuser via a flanged connection. The other end of the connecting piping will be threaded into the pre-cut hole in the existing discharge tower.~~

~~8.~~7. The annulus between the diffuser headers ~~connecting pipe~~ and the pre-cut holes in the existing concrete discharge tower will be filled using a pourback (underwater formwork and concrete pumped into the forms from the barge) or by using grout bags.

~~9.~~8. The side-cast riprap would be replaced and additional riprap would be imported and then placed around the structure for scour protection.

9. The existing screen on top of the existing discharge tower would be removed and replaced with a concrete cap that would be secured to the existing concrete discharge tower.

3 DISCHARGE MODIFICATIONS ENVIRONMENTAL ANALYSIS

3.1 Air Quality

Previous Environmental Analysis Summary

The 2017 Supplemental EIR found the Lease Modification Project would increase maximum daily construction oxides of nitrogen (NO_x) emissions by approximately 73.85 pounds per day. Although this would not be a significant impact alone, in combination with the maximum daily construction NO_x emissions from the HBDP (evaluated in the 2010 Subsequent EIR), which range from approximately 39 to 182 pounds per day, would exceed the South Coast Air Quality Management District (SCAQMD) maximum daily construction emission threshold for NO_x. As such, this was determined to be a significant and unavoidable impact during construction in both the 2010 Subsequent EIR and 2017 Supplemental EIR (Impact AQ-1 in the 2017 Supplemental EIR). All other criteria pollutants would not exceed the SCAQMD maximum daily construction emission thresholds. Furthermore, the 2017 Supplemental EIR determined that there would be a significant and unavoidable construction impact from localized particulate matter emissions (PM_{10} and $PM_{2.5}$) because these emissions would exceed the SCAQMD localized significance thresholds. Other criteria pollutant emissions from reactive organic gases (ROG), carbon monoxide (CO), and sulfur oxides (SO_2) would not exceed either the mass emission thresholds or localized significance thresholds during construction and would result in less than significant impacts. Additionally, the 2017 Supplemental EIR concluded that there would be less than significant impacts from all criteria air pollutant emissions during operations. Cumulative impacts were found to be significant and unavoidable in the 2017 Supplemental EIR because the maximum daily NO_x emissions for the combined HBDP and Lease Modification Project construction would exceed the SCAQMD threshold (Impact CMLTV-AQ-1 in the 2017 Supplemental EIR).

Diffuser Modifications Analysis

Construction

Construction of the new linear diffuser would result in a temporary addition of pollutants to the local airshed caused by dust emissions and combustion pollutants from offshore marine vessels, onshore equipment for material transfer at the Port of Long Beach, construction worker vehicles, and off-site haul trucks. NO_x and CO (carbon monoxide) emissions would primarily result from the use of offshore marine vessels, onshore equipment for material transfer, and construction-related motor vehicles that bring and take away construction workers from the construction site. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions.

Construction of the new linear diffuser would involve similar construction equipment, marine vessels, frequency of use, and overall schedule as analyzed for the Lease Modification Project diffuser analyzed in the 2017 Supplemental EIR. Construction of the new linear diffuser would involve similar transportation of diffuser parts to the Port of Long Beach, loading the diffuser onto a barge using onshore forklifts and cranes, transportation of the diffuser via tug boat and barge to the construction area, demolition of the existing discharge tower, and installation of the new linear diffuser as analyzed for the Lease Modification Project in the 2017 Supplemental EIR. Additionally, construction of the new linear diffuser would involve side-casting ocean floor sediment during construction. As stated in the 2017 Supplemental EIR, any excavated suspended sediments would ~~likely~~ be redistributed by ocean currents ~~and if excess material cannot be re-used or relocated on the ocean floor, it will be loaded on support barges and taken to the Port of Long Beach for disposal in an appropriate land-based facility. The potential land disposal of ocean floor sediment that might not redistribute by the natural ocean currents was previously evaluated in the 2017 Supplemental EIR and would not substantially change with the new linear diffuser modifications~~.

Riprap moved during construction would be replaced and approximately 6400 cubic yards of additional riprap would be imported, which would increase the number of haul truck or marine vessel trips required for delivering of this material. As a result, the construction emissions from worker trips, haul truck trips, construction equipment use, and marine vessel transportation are anticipated to be the same as analyzed for the Lease Modification Project diffuser in the 2017 Supplemental EIR, except for the addition of one round trip from the Port of Long Beach by a tug boat and barge as well as additional round trips by haul trucks to deliver the new riprap to the Port of Long Beach. Based on default values for haul material density and haul truck capacity in the California Emissions Estimator Model (CalEEMod) Version 2016.3.2, transporting the riprap to the Port of Long Beach would result in approximately 26 round trips by these haul trucks (see Appendix A for calculation details). It is assumed these haul truck round trips and the tug boat

round trips required to import the additional riprap to the diffuser site would occur near the end of diffuser installation and before the concrete cap is placed on the existing discharge tower. As a result, new linear diffuser construction emissions would increase on one day during diffuser installation.

To determine the possible increase in emissions that could occur from those analyzed in the 2017 Supplemental EIR due to potentially one additional tug boat round trip and additional haul truck trips during construction of the new linear diffuser, information from the same marine vessel emission calculation methodology was used (*Emission Estimation Methodology for Commercial Harbor Craft Operating in California* [CARB 2004}]. Similarly, the same assumptions for tug boat engine characteristics, fuel sulfur content (0.0015% or 15 parts per million [ppm] sulfur diesel fuel to comply with the Harbor Craft Fuel Regulation [CARB 2008]), speed (following the Santa Barbara Channel Vessel Speed Reduction Trial [SBCAPD 2014]), and travel distance used in the 2017 Supplemental EIR were used in this analysis. The maximum daily emissions for construction of the Lease Modification Project were identified to occur on the last day of dredging in the 2017 Supplemental EIR. The new emissions from the tug boat and haul truck trips would occur during one day near the end, but before the last day of diffuser installation. The construction emissions for this day are shown in Table 1, Estimated Daily Maximum Construction Emissions – New Linear Diffuser, and compared to the previously determined maximum daily construction emissions in the 2017 Supplemental EIR. This estimate also assumes simultaneous construction of the wedgewire screen intake and new linear diffuser as a worst case scenario; the same as was assumed in the 2017 Supplemental EIR.

Table 1
Estimated Daily Maximum Construction Emissions – New Linear Diffuser (pounds/day unmitigated)

	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
~~Emission~~ Additional Emissions During One Day of the New Diffuser Installation [1]	~~1.62~~1.95	~~9.86~~20.35	~~7.72~~10.22	0.~~02~~04	~~0.31~~1.09	~~0.31~~0.54
Typical Daily Construction Emissions from 2017 Supplemental EIR [2]	3.22	19.70	15.14	0.02	1.26	0.80
One Day Total Construction Emissions for New Linear Diffuser	~~4.84~~5.17	~~29.56~~40.05	~~22.86~~25.36	**0.**~~04~~06	~~1.57~~2.35	~~1.11~~1.34
2017 Supplemental EIR – Lease Modification Project (For Comparison Only) [1,2]	*6.71*	*73.85*	*34.52*	*0.15*	*4.26*	*2.13*
Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Threshold or 2017 Supplemental EIR Emissions exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix A.
Notes: [1] Assumes one additional tug boat and barge roundtrip from the Port of Long Beach and ~~26~~ 38 haul truck roundtrips. A typical barge has a capacity of 1,750 tons (U.S. ACOE 2018). Assuming that riprip has a density of approximately 2 tons to 2.36 tons per cubic yard, the additional riprap import required for the diffuser modifications would be approximately 1,200 tons to 1,416 tons, respectively. Therefore, the additional riprap required for the diffuser modifications would be accommodated by one round trip from the Port of Long Beach by a tug boat and barge.
[2] Shows emissions analyzed for a normal work day during diffuser and wedgewire screen intake installation in the 2017 Supplemental EIR.
[3] Maximum daily construction emissions occurred on the last day of the dredging phase of construction of the Lease Modification Project in the 2017 Supplemental EIR.
[4] Includes emissions from simultaneous construction of the wedgewire screen intake from the Lease Modification Project analyzed in the 2017 Supplemental EIR.

As indicated in Table 1, the additional tug boat and haul truck trips associated with construction of the new linear diffuser, including simultaneous construction of the wedgewire screen intake, would not exceed those of the Lease Modification Project analyzed in the 2017 Supplemental EIR and would not exceed any of the SCAQMD construction thresholds. As such, impacts would be less than significant.

As stated in the 2017 Supplemental EIR, the previous analysis in the 2010 Subsequent EIR identified a significant and unavoidable impact from NO_x emissions that would exceed the SCAQMD daily emission construction threshold (182.15 pounds per day of NO_x during Year 1 of HBDP construction). As a result, a significant and unavoidable cumulative impact from construction NO_x emissions was identified in the 2017 Supplemental EIR (Impact CMLTV-AQ-1 in the 2017 Supplemental EIR). However, the new linear diffuser would not substantially increase the previously identified significant and unavoidable impact in the 2017 Supplemental EIR because the maximum daily construction NO_x emissions from construction of the new linear diffuser would be the same as those analyzed for the Lease Modification Project (occurring during the last day of dredging).

The SCAQMD recommends the evaluation of localized nitrogen dioxide (NO_2), CO, PM_{10}, and $PM_{2.5}$ impacts to sensitive receptors in the immediate vicinity of the project site as a result of construction activities. Construction of the new linear diffuser would occur approximately 1,500 feet offshore. The nearest sensitive receptors to the theoretical onshore area to the new linear diffuser construction emissions would be located approximately 2,600 feet (approximately 792 meters) to the northeast of the diffuser construction area. The project site is located in Source Receptor Area 18, representing North Orange County. Extrapolating the SCAQMD Mass Rate Localized Significance Thresholds Look-up Table at 2,600 feet (approximately 792 meters) in this Source Receptor Area, the localized significance threshold for NO_x would be approximately 297 pounds per day, conservatively assuming a one-acre construction site (SCAQMD 2009)[1]. As a

[1] Assuming a 1-acre site for the calculation of localized criteria pollutant emissions is considered the most conservative value given by the SCAQMD because it only allows for dispersion of the construction emissions over a 1-acre site before calculating potential localized impacts, instead of a larger site (e.g., 5 acres) that would result in lower localized criteria pollutant impacts (http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds).

result, even in this conservative scenario the construction of the new linear diffuser would not result in localized criteria pollutant impacts because the maximum daily construction emission of the new linear diffuser would be equal to the 73.85 pounds per day of NO_x estimated for the Lease Modification Project in the 2017 Supplemental EIR (occurring during the last day of dredging and assuming the worst-case scenario of simultaneous construction with the wedgewire screen intake). Therefore, construction of the new linear diffuser would not result in localize criteria pollutant emissions and impacts would be less than significant.

Potential sources that may emit odors during construction activities include diesel equipment and gasoline fumes. However, odors from these sources would be localized and concentrated at the diffuser construction area, approximately 1,500 feet offshore. As such, odors would dissipate before reaching the nearest sensitive receptors and would result in a less than significant impact. Additionally, construction of the new linear diffuser would include the same or similar construction equipment, location, and schedule as the Lease Modification Project for which odor impacts during construction were determined to be less than significant in the 2017 Supplemental EIR.

Construction of the new linear diffuser would not create a new significant impact on air quality or odors and would not cause a substantially more severe impact on air quality or odors than those of the Lease Modification Project analyzed in the 2017 Supplemental EIR.

Operation

The new linear diffuser could require dive trips for maintenance that would emit criteria air pollutants from marine vessel use for transporting divers between the diffuser and port. However, the new linear diffuser would require the same type and frequency of maintenance as the Lease Modification Project diffuser, which was determined in the 2017 Supplemental EIR to have a less than significant impact.

The new linear diffuser would not substantially change the energy use, vehicle trips, or other sources of criteria air pollutants required for operation of the HBDP. Additionally, the new linear diffuser would not change existing land uses or directly increase population in the area, nor would they result in a considerable cumulative increase in emissions of nonattainment pollutants. Finally, the new linear diffuser would not consist of any uses typically associated with odors. As such, operation of the new linear diffuser would not substantially change the air quality effects of the HBDP that were previously analyzed in the 2017 Supplemental EIR, and impacts would be less than significant.

Operation of the new linear diffuser would not create a new significant impact on air quality or odors and would not cause a substantially more severe impact on air quality or odors than those of the Lease Modification Project analyzed in the 2017 Supplemental EIR.

3.2 Marine Biological Resources

Previous Environmental Analysis Summary

Construction and Maintenance

The 2017 Supplemental EIR found that the Lease Modification Project could result in temporary disturbance of special-status species from construction and maintenance activities, including increases in the benthic footprint from side-casting and replacement of the existing riprap around the intake and discharge pipeline towers. However, excluding underwater noise, these impacts were determined to be less than significant. The marine vessels used for construction and maintenance activities were also found to have a less than significant impact from the spread of invasive and non-native marine species with incorporation of mitigation requiring the boats to either be continuously based out of the Port of Long Beach or be cleaned prior to entering southern California.

Operation

The potential entrainment of special-status species from shear forces and salinity levels resulting from the operation of the diffuser under the Lease Modification Project was also evaluated in the 2017 Supplemental EIR. The shear forces created by the brine effluent discharged from the diffuser ports and the elevated salinity levels within the BMZ could affect marine organisms within the BMZ. The 2017 Supplemental EIR assumed that 100% of the fish larvae in the BMZ would experience mortality, while the Desalination Amendment states that 23% of the fish larvae within the entrained flow should be considered to experience mortality. Based on this assumption, the 2017 Supplemental EIR estimated that the Lease Modification Project diffuser would have an entrained flow of 782 MGD, entraining approximately 543 million fish larvae per year under stand-alone operation of the diffuser. However, mitigation measures would be implemented requiring wetland restoration to completely mitigate these potential entrainment impacts. Therefore, the 2017 Supplemental EIR found that impacts from entrainment due to operation of the Lease Modification Project's brine diffuser would be less than significant.

Diffuser Modifications Analysis

Construction and Maintenance

During construction, portions of the ocean floor would be temporarily disturbed for levelling. These sediments would be side-cast during construction, further expanding the area of temporary benthic disturbance. Additionally, the existing riprap around the seaward and shorewardhalf of the downcoast sides of the discharge pipeline tower would be temporarily side-cast to the adjacent ocean floor area and re-used at the end of construction. Furthermore, anchoring of the tug boat and barge near the diffuser site during construction would temporarily disturb benthic habitat at the anchoring location. These activities would temporarily (during the approximately 2-month duration of construction) disturb the benthic environment and any sensitive species, such as invertebrates, fish, or marine mammals in and around the riprap at the discharge tower site. Maintenance of the new linear diffuser could also require periodic removal of biofouling by divers that could also affect these sensitive species.

Anchor placement, levelling of the ocean floor, and riprap reconfiguration could impact benthic organisms or result in short-term, temporary displacement. However, benthic organisms are anticipated to recolonize the disturbed benthic environment after completion of construction. Fish would likely avoid the area during construction, avoiding injury or mortality, and return after activities are completed. As such, their displacement would be temporary. Additionally, construction of the new linear diffuser would not increase the area of temporary benthic disturbance due to the anchoring of marine vessels during construction. As stated in the 2017 Supplemental EIR, any excavated suspended sediments would likely be redistributed by ocean currents. and if excess material cannot be re-used or relocated on the ocean floor, it will be loaded on support barges and taken to the Port of Long Beach for disposal in an appropriate land-based facility. As a result, the temporary benthic impacts from construction of the new linear diffuser would not be substantially different than those analyzed for the Lease Modification Project in the 2017 Supplemental EIR.

Various marine mammals and sea turtles could be located in the vicinity of the new linear diffuser construction area but would likely avoid the diffuser area during construction activities by swimming away. There would also be a low potential risk of injury to or mortality of any special-status marine mammal species from accidental collision with construction vessels due to the limited construction timeframe. If a collision occurred, it would not affect the survivability of any special-status marine mammal species populations.

Potential impacts on special-status species during construction would be reduced by implementation of APM-4, providing worker education on protection of marine organisms; APM-5, inclusion of marine species monitoring during construction; and APM-6, an anchoring plan to

avoid sensitive habitats, as described in the 2017 Supplemental EIR. These APMs would similarly apply to construction of the new linear diffuser and would reduce potential impacts to special-status species to less than significant.

During construction and maintenance of the new linear diffuser, marine vessels would be used that could be sourced from the Port of Long Beach or closer. These marine vessels have the potential to transport invasive or non-native species into the area. However, the likelihood of transporting invasive species is low because of the short duration of construction and time spent by the marine vessels in different harbors and the existing regulations of ballast water discharge in harbors. Additionally, mitigation measure MM OWQ/MB-4 would further prevent possible introduction of invasive or non-native marine organisms by controlling the selection, docking, and cleaning of marine vessels used during construction and maintenance of the new linear diffuser. The new linear diffuser would have the same potential for the introduction of invasive or non-native marine organisms as the Lease Modification Project analyzed in the 2017 Supplemental EIR and impacts would be less than significant.

Construction of the new linear diffuser would not create a new significant impact to marine biology and would not cause a substantially more severe impact to marine biological resources than those of the Lease Modification Project analyzed in the 2017 Supplemental EIR.

Operational

Diffuser Entrainment

The multiport diffuser discharges the brine effluent through nozzles that increase the mixing rate in the receiving waters. Diffuser-related entrainment occurs when marine organisms in the receiving ocean water experience high levels of shear stress for short durations, which is thought to cause mortality. During operation of a diffuser dilution occurs as ambient water is pulled into the jets. This entrained flow mixes with the brine and reduces the salt concentration. Flow shear (change in velocity per distance) due to small (e.g., 1 mm) eddies can damage organisms entrained into the jets. The only region of the jets where this is of concern is the region up to the jet's maximum (terminal) height of rise. The falling portion of the jets is not momentum driven and would not affect marine organisms due to shear.

Based on the new linear diffuser design and using the UM3 module within Plumes18b, developed by the U.S. Environmental Protection Agency (EPA) and in accordance with guidance provided by Roberts (2018a and 2018b), the new linear diffuser would result in an entrained flow of approximately 168 MGD and a BMZ radius of approximately 63.2 feet during standalone operation (Alden, 2018). (It should be noted that the 14-port linear diffuser analyzed in this report has a minor location change~~,~~ from the 14-port linear diffuser analyzed in Alden~~,~~ 2018. ~~-~~However, the ports diameter, velocity, depth,

and angle remain the same, thereby not changing the entrained flow and BMZ modeling results found in Alden 2018.)– As such, the new linear diffuser would result in a reduction of marine organism entrainment from diffuser shear stressed compared to the entrained flow of 782 MGD evaluated for the Lease Modification Project diffuser during standalone operation in the 2017 Supplemental EIR, which assumed that 100% of the entrained water is subjected to lethal shear force for marine organisms.

As described in the 2017 Supplemental EIR, the new linear diffuser would incorporate mitigation measure MM OWQ/MB-7 requiring implementation of a Diffuser-Operation Marine Life Mitigation Plan. This plan would require compensatory mitigation for marine life impacts, including those from diffuser entrainment, in an amount determined with the Santa Ana RWQCB. As such, impacts from the new linear diffuser would be less than those analyzed in the 2017 Supplemental EIR and impacts would be less than significant.

Diffuser Benthic Impacts

Installation of the new linear diffuser would result in an increase in permanent benthic impacts compared to the existing discharge tower, but these impacts would be less than those analyzed for the Lease Modification Project diffuser in the 2017 Supplemental EIR. The new linear diffuser, and surrounding riprap would encompass a linear area of approximately 226~~212~~ feet by 20 feet, including a portion of the existing discharge tower riprap area. ~~with an additional area of 40 feet by 54 feet near the terminus the diffuser pipeline.~~ In aggregate, the new linear diffuser design would encompass a benthic footprint of approximately 6,375~~400~~ square feet. As such, the benthic footprint will be decreased by approximately 759~~34~~ square feet compared to the permanent benthic footprint of the Lease Modification Project diffuser analyzed in the 2017 Supplemental EIR. See Figure 2 - ~~Comparison of Existing Discharge Tower Footprint, 2017 SEIR Diffuser Footprint and Proposed 14 - Port Linear Diffuser Footprint Schematic~~Huntington Beach Desalination Project Discharge Structure Layout Schematic.

As described in the 2017 Supplemental EIR, the new linear diffuser would implement mitigation measure MM OWQ/MB-7 requiring implementation of a Diffuser-Operation Marine Life Mitigation Plan. This plan would require compensatory mitigation for marine life impacts in an amount determined with the Santa Ana RWQCB. As such, impacts from the new linear diffuser would be less than those analyzed in the 2017 Supplemental EIR and impacts would be less than significant.

Operation of the new linear diffuser would not create a new significant impact to marine biology and would not cause a substantially more severe impact to marine biological resources than those of the Lease Modification Project analyzed in the 2017 Supplemental EIR.

3.3 Greenhouse Gas Emissions

Previous Environmental Analysis Summary

The 2010 Subsequent EIR analyzed the direct and indirect greenhouse gas (GHG) emissions from construction and operation of the HBDP and found that no significant impacts associated with GHG emissions would occur due to the HBDP's energy efficiency and GHG offset purchases. The 2017 Supplemental EIR found that construction of the Lease Modification Project would only increase GHG emissions by 71.64 metric ton of carbon dioxide equivalent (MT CO_2E) or 1.43 MT CO_2E per year over the life of the Lease Modification Project. Operation of the Lease Modification Project would result in a maximum of 14.12 MT CO_2E per year. Additionally, the GHG Plan would offset all GHG emissions resulting in a net zero increase in GHG emissions. Therefore, the 2017 Supplemental EIR determined that the Lease Modification Project's GHG emissions would be below SCAQMD's 10,000 MT CO_2E per year threshold, and its impacts would be less than significant. Additionally, the Lease Modification Project was found to not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases, so that impacts would be less than significant.

Diffuser Modifications Analysis

Construction

Construction of the proposed new linear discharge modifications would result in GHG emissions that are primarily associated with the use of off-road construction equipment and on-road construction vehicles (e.g., haul trucks and vendor/delivery trucks) and worker vehicles.

As stated in Section 3.1, Air Quality, construction of the new linear diffuser would involve similar construction equipment, marine vessels, frequency of use, and overall schedule as analyzed for the Lease Modification Project diffuser analyzed in the 2017 Supplemental EIR, except for the addition of one round trip from the Port of Long Beach by a tug boat and barge as well as additional round trips by haul trucks to deliver the new riprap to the Port of Long Beach. Construction of the new linear diffuser would involve similar transportation of diffuser parts to the Port of Long Beach, loading the diffuser onto a barge using onshore forklifts and cranes, transportation of the diffuser via tug boat and barge to the construction area, demolition of the existing discharge tower, and installation of the new linear diffuser as analyzed for the Lease Modification Project in the 2017 Supplemental EIR. Additionally, installation of the new linear diffuser would involve side-casting ocean floor sediment during construction. As stated in the 2017 Supplemental EIR, any excavated suspended sediments would ~~likely~~ be redistributed by ocean currents. ~~and if excess material cannot be re-used or relocated on the ocean floor, it will be loaded on support barges and taken to the Port of Long Beach for disposal in an appropriate land based facility. The potential land disposal of~~

~~ocean floor sediment that might not redistribute by the natural ocean currents was previously evaluated in the 2017 Supplemental EIR and would not substantially change with the new linear diffuser modifications.~~

Riprap moved during construction would be reused and an additional 6400 cubic yards of riprap would be imported, which would increase the number of haul truck and tug boat trips required for delivering this material. As a result, the construction emissions resulting from haul truck trips and marine vessel transportation are anticipated to increase compared to those analyzed for the Lease Modification Project diffuser in the 2017 Supplemental EIR.

To determine the possible additional in emissions that could occur from those analyzed in the 2017 Supplemental EIR due to one construction day with an additional tug boat round trip and 26 haul truck round trips during construction of the new linear diffuser, information from the same marine vessel emission calculation methodology was used (*Emission Estimation Methodology for Commercial Harbor Craft Operating in California* [CARB 2004}]. Similarly, the same assumptions for tug boat engine characteristics, speed (following the Santa Barbara Channel Vessel Speed Reduction Trial [SBCAPD 2014]), and travel distance used in the 2017 Supplemental EIR were used. The potential increase in GHG emissions from construction of the new linear diffuser are shown in Table 2, Estimated Annual Construction GHG Emissions – New Linear Diffuser. This estimate assumes simultaneous construction of the wedgewire screen intake and new linear diffuser as a worst case scenario; the same as was assumed in the 2017 Supplemental EIR.

Table 2
Estimated Annual Construction GHG Emissions – New Linear Diffuser

Modifications	MT CO_2E	Amortized Annual Emissions[1]
2017 Supplemental EIR – Lease Modification Project [2]	71.64	1.43
New Linear Diffuser Emissions [3]	~~3.75~~4.21	0.08
Total	**75.~~34~~85**	**1.~~51~~52**

Source: Appendix A.
Notes: MT = metric tons; CO_2E = carbon dioxide equivalent
[1] Emissions amortized over the 50 year project life time.
[2] Includes emissions from simultaneous construction of the wedgewire screen intake from the Lease Modification Project analyzed in the 2017 Supplemental EIR.
[3] Assumes one tug boat round trip and 26 haul truck round trips during one construction day for installation of the new linear diffuser.

Construction-related GHG emissions would not represent a long-term source of GHG emissions. Additionally, as stated in the 2017 Supplemental EIR the GHG Plan requires the offset of 100% of the construction-related GHG emissions. Therefore, the new linear diffuser's GHG emissions would remain below SCAQMD's 10,000 MT CO_2E per year threshold, would be offset to net zero

GHG emissions, and would not conflict with any applicable GHG regulations. Therefore, impacts would be less than significant.

Construction of the new linear diffuser would not create a new significant impact from GHG emissions and would not cause a substantially more severe impact from GHG emissions than those of the Lease Modification Project analyzed in the 2017 Supplemental EIR.

Operation

The new linear diffuser could require dive trips for maintenance that would emit GHG's from marine vessel use for transporting divers between the diffuser and port. However, the new linear diffuser would require the same type and frequency of maintenance as the Lease Modification Project diffuser, which was determined in the 2017 Supplemental EIR to have a less than significant impact.

The new linear diffuser would not substantially change the energy use, vehicle trips, or other sources of criteria air pollutants required for operation of the HBDP. Additionally, the new linear diffuser would not change existing land uses or directly increase population in the area that could indirectly increase cumulative GHG emissions. As such, operation of the new linear diffuser would not substantially change the operational GHG effects of the HBDP that were previously analyzed in the 2017 Supplemental EIR, would not conflict with any applicable GHG regulations, and would have less than significant impacts.

Operation of the new linear diffuser would not create a new significant impact from GHG emissions and would not cause a substantially more severe impact from GHG emissions than those of the Lease Modification Project analyzed in the 2017 Supplemental EIR.

3.4 Hydrology and Water Quality

Previous Environmental Analysis Summary

The 2010 Subsequent EIR analyzed potential onshore and offshore water quality effects from onshore construction and operation of the HBDP and determined that impacts would be less than significant with implementation of a Storm Water Pollution Prevention Plan (SWPPP), Water Quality Management Plan (WQMP), and applicable best management practices (BMPs) and control measures in a National Pollution Discharge Elimination System (NPDES) permit for the BHDP.

The 2017 Supplemental EIR analyzed the potential short-term effects to ocean water quality, including turbidity and chemical spills, which could occur from riprap side-casting, removal of the existing discharge tower, and installation of the new linear diffuser. With implementation of APMs requiring turbidity minimization, spill response planning, and worker training, impacts to ocean

water quality during construction of the Lease Modification Project were determined to be less than significant.

During maintenance of the Lease Modification Project, the 2017 Supplemental EIR identified potential effects from turbidity and chemical spills from boats and divers during maintenance activities. However, with the implementation of APMs to minimize turbidity, to plan for spill responses, and to train maintenance workers on potential water quality effects, impacts were determined to be less than significant from the Lease Modification Project.

The 2017 Supplemental EIR also found that ocean water quality could be affected during operation of the Lease Modification Project if chemicals could leach into the water column from the wedgewire screens used for the intake. The Lease Modification Project would construct the rotating wedgewire screens from stainless steel, unless it can be proved to the Commission, Water Boards, and Coastal Commission staffs with future information that installing stationary copper-nickel alloy wedgewire screens would not result in significant adverse environmental impacts. As a result, the 2017 Supplemental EIR determined that there would be less than significant impacts because rotating stainless steel wedgewire screens would not leach chemicals into the water column.

The brine effluent from the Lease Modification Project would affect ocean water quality if it resulted in salinity levels in excess of standards. During stand-alone operation an annual average flow rate of approximately 56.7 MGD of 63.1 ppt brine effluent would be diluted to within 2 ppt of natural salinity within 80 feet of the diffuser port for the Lease Modification Project. This is less than the maximum distance of 328 feet required by the Desalination Amendment and was determined to result in a less than significant impact in the 2017 Supplemental EIR (see Section 3.2, Marine Biological Resources, for details of the BMZ analysis).

Diffuser Modifications Analysis

Construction and Maintenance

Construction activities, including anchoring marine vessels~~, dredging~~ and levelling of the ocean floor sediment for installation of the new linear diffuser, and reconfiguration of riprap could disturb ocean floor sediments and increase turbidity. Additionally, construction and maintenance of the new linear diffuser could include potential water quality impacts resulting from fuel, oil, or construction vessel bilge releases.

However, construction of the new linear diffuser would require implementation of APM-1, Best Management Practices for protecting ocean water quality; APM-2, Turbidity Minimization and Monitoring Plan; and APM-3, Spill Prevention and Response Plan as described in the 2017 Supplemental EIR. These requirements would help reduce sediment generation during offshore

construction and maintenance of the proposed modifications and reduce the potential risk of spilling of hazardous chemicals. The Turbidity Minimization and Monitoring Plan also includes identification of equipment and sediment disposal locations as well as maintenance monitoring to ensure that the Desalination Amendment turbidity requirements are achieved. As a result, construction and maintenance of the new linear diffuser would have the same potential impacts to ocean water quality as the Lease Modification Project described in the 2017 Supplemental EIR and impacts would be less than significant.

Construction of the new linear diffuser would not create a new significant impact to hydrology and water quality and would not cause a substantially more severe impact to hydrology and water quality than that of the Lease Modification Project analyzed in the 2017 Supplemental EIR.

Operation

The diffuser design has been changed to comply with the requirements of the Desalination Amendment based on guidance by Roberts (2018a and 2018b). The new linear diffuser is designed to maximize dilution, minimize the size of the brine mixing zone, minimize the suspension of benthic sediments, and minimize mortality of all forms of marine life during operation. (It should be noted that the 14-port linear diffuser analyzed in this report has a minor location change, from the 14-port linear diffuser analyzed in Alden 2018. However, the ports diameter, velocity, depth, and angle remain the same, thereby not changing the entrained flow and BMZ modeling results found in Alden 2018.) The new linear diffuser design includes 14 discharge ports submerged 17.8 feet MLLW below the ocean surface. The ports would be installed at an angle of 60° with an effective diameter of 1.28 feet for each port. The diffuser is designed for a peak daily flow of 62.5 MGD and a corresponding discharge salinity of 62.4 ppt. The resulting jet velocity of the discharge at this peak daily flow would be approximately 5.32 feet per second, which would dilute the brine discharge to within 2 ppt of the ambient salinity value of 33.5 ppt within a 63.2 foot radius of the diffuser. The resulting BMZ area would encompass approximately 0.64 acres (Alden, 2018). As such, the new linear diffuser design would comply with the Desalination Amendment, which requires that brine discharge salinity declines to within 2 ppt over natural background salinity within 328 feet (100 meters) from the point of discharge (natural background salinity at Huntington Beach has been measured at approximately 33.5 ppt). It is also less than the BMZ radius of 79.7 feet (24.3 meters) calculated for the Lease Modification Project diffuser in the 2017 Supplemental EIR that was determined to have a less than significant impact.

Operation of the new linear diffuser would not create a new significant impact to hydrology and water quality and would not cause a substantially more severe impact to hydrology and water quality than those of the Lease Modification Project analyzed in the 2017 Supplemental EIR.

3.5 Noise

Previous Environmental Analysis Summary

The 2010 Subsequent EIR found that during construction from equipment and truck use and during operation of the pumps and equipment associated with the HBDP, noise and vibration impacts to surrounding sensitive receptors would be less than significant by adherence to the construction noise restrictions in Chapter 8.40, Noise Control, of the Municipal Code and by enclosing the outdoor pump stations. Similarly, the 2017 Supplemental EIR found that noise impacts from construction and operation of the Lease Modification Project would occur offshore, would not exceed applicable community noise standards, and would be less than significant.

The 2017 Supplemental EIR also evaluated the potential effects of underwater noise and vibration from construction of the Lease Modification Project on seabirds, fish, and marine mammals. Specifically, the 2017 Supplemental EIR determined that if detailed geotechnical studies find that vibratory pile driving is a feasible construction method for use during installation of the wedgewire screen intake only (installation of the diffuser would not require pile driving), then underwater noise impacts on sensitive marine species, including migrating whales, would be less than significant with incorporation of mitigation specifying pile driving work windows and requiring a soft start for pile driving. If vibratory pile driving is not found to be feasible after detailed geotechnical evaluation, then impact pile driving would need to be used during installation of the wedgewire screen intake. The 2017 Supplemental EIR determined that impact pile driving during installation of the wedgewire screen intake would result in significant and unavoidable underwater noise impacts on sensitive marine mammals with implementation of all feasible mitigation (Impact OWQ/MB-3 in the 2017 Supplemental EIR). However, pile driving is not required for installation of the diffuser and would not result in a significant impact due to underwater noise.

Diffuser Modifications Analysis

Construction

Onshore Sensitive Receptors

Construction of the new linear diffuser would generate noise due to the use of heavy construction equipment including marine vessels, similar to the Lease Modification Project analyzed in the 2017 Supplemental EIR. Noise impacts resulting from construction depend on the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise-sensitive receptors.

The City provides an exemption for noise associated with construction and grading in Municipal Code Section 8.40.090, Special Provisions, provided that activities do not take place between the

hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday. In general, all outdoor living areas are intended to be compatible with noise levels with a community noise equivalent level (CNEL) less than 65 dBA. Similarly, indoor living spaces are intended to be compatible with interior noise levels less than CNEL 45 dBA.

During construction of the new linear diffuser, onshore sensitive receptors, including residential land uses, could be exposed to short-term, intermittent noise increases. The new linear diffuser would have similar construction equipment, construction schedule, and distance to sensitive receptors as the Lease Modification Project. The 2017 Supplemental EIR identified the residences to the west of the construction site as the most sensitive receptors to short-term construction noise. At this location construction noise levels are predicted to range up to 57 dBA equivalent sound level (L_{eq}) for the diffuser. If construction of the diffuser and wedgewire screen intake overlap, the resulting maximum noise level during this 2-month period would be 60 dBA L_{eq} at these closest onshore sensitive receptors.

These noise levels would be below the significance threshold of 65 dB and would occur during the allowable hours of construction. Construction noise impacts are also short-term and would cease upon completion of construction. The combined construction noise levels would be barely perceptible compared to the projects being constructed separately, as the largest increase in noise over ambient noise levels is 3 db. In addition, the 2017 Supplemental EIR requires implementation of mitigation measures MM CON-15 for the use of mufflers on construction equipment, compliance with the City of Huntington Beach Municipal Code-Noise Control Chapter, notifying property owners of construction, use of noise attenuation methods where feasible, avoiding noise sensitive areas with haul trucks, and placing stationary equipment so that noise is emitted away from sensitive noise receptors would further minimize any impacts from construction noise.

Construction of the new linear diffuser system would take approximately 2 months and would primarily occur approximately 1,500 feet offshore. Due to the distance from onshore receptors, noise generated from construction equipment would be below acceptable exterior noise level standards established by the City and impacts would be less than significant.

Offshore Sensitive Receptors

Construction at the diffuser location and operation of marine vessels during construction would generate underwater noise that could result in short-term elevated noise levels. The elevated noise levels near the diffuser could cause behavioral avoidance or injury to marine mammals, sea turtles, sea diving birds, and fishes.

The new linear diffuser would use similar construction equipment, schedule, and location as the Lease Modification Project. The 2017 Supplemental EIR found that a significant impact would

only occur if impact pile driving was used during construction of the wedgewire screen intake. However, the diffuser would not require the use of pile driving and would have lower temporary noise levels during construction. Noise from tug boat and crew boat engines would be similar to that from other vessels that routinely transit the ocean surface, and noise from ship traffic would be comparable to other routine noise-generating activities in the area. Therefore, diffuser construction noise would not substantially affect offshore sensitive receptors as demonstrated in the analysis for construction of the Lease Modification Project in the 2017 Supplemental EIR. Impacts to offshore sensitive receptors from construction of the new linear diffuser would be less than significant.

Construction of the new linear diffuser would not create a new significant impact from noise and would not cause a substantially more severe impact from noise on either onshore or offshore sensitive receptors than those of the Lease Modification Project analyzed in the 2017 Supplemental EIR.

Operation

Onshore Sensitive Receptors

Onshore sensitive receptors could be exposed to noise from operation of the HBDP, including pumps and worker vehicle trips. The new linear diffuser would not substantially modify these onshore operations and analysis in the 2010 Subsequent EIR and 2017 Supplemental EIR found that noise impacts to onshore sensitive receptors would be less than significant. Additionally, the Lease Modification Project would be required to implement MM NOI-1, requiring any outdoor pumps to achieve acceptable noise levels in the City's Municipal Code. This mitigation measure would also apply to reducing operational noise from the new linear diffuser. Therefore, operational noise impact to onshore sensitive receptors would be less than significant.

Offshore Sensitive Receptors

Operation of the new linear diffuser would not substantially change the noise effects of the Lease Modification Project analyzed in the 2017 Supplemental EIR. Maintenance could involve dive trips by a crew boat for intermittent inspection of the diffuser. However, these noise levels would be lower than those produced during construction at the same offshore location of the diffuser, which would have a less than significant impact on offshore sensitive receptors. The use of a crew boat for maintenance would produce similar noise levels as existing boating activities in the area and would result in less than significant noise impacts to offshore sensitive receptors.

Operation of the new linear diffuser would not create a new significant impact from noise and would not cause a substantially more severe impact from noise on either onshore or offshore

sensitive receptors than those of the Lease Modification Project analyzed in the 2017 Supplemental EIR.

3.6 Recreation

Previous Environmental Analysis Summary

The 2010 Subsequent EIR analyzed potential effects of the HBDP construction and operation to onshore recreation, including consistency with policies governing public access and use of recreational facilities, and determined that impacts would be less than significant.

The 2017 Supplemental EIR evaluated the potential effects off marine vessels used during construction and maintenance of the Lease Modification Project on offshore recreational activities. The impact on beach and nearshore recreation, including surfing and swimming, was determine to be less than significant because construction and operation of the Lease Modification Project would occur at a substantial distance offshore and away from these recreational use areas. The 2017 Supplemental EIR found that the use of marine vessels during construction could impede recreational boating, diving, and fishing activities, but impacts would be less than significant because the Lease Modification Project recreation would be precluded from the construction area and public noticing of construction activities would occur. Similarly, during operation the intake and diffuser components of the Lease Modification Project were determined to result in less than significant impacts because they would be submerged sufficiently underwater and maintenance operations would be short-term and temporary.

Diffuser Modifications Analysis

Construction

The proposed diffuser design modifications would occur approximately 1,500 feet offshore at the end of the HBGS discharge pipeline, the same general location as the diffuser analyzed as part of the Lease Modification Project in the 2017 Supplemental EIR. As such, construction would not affect beach and nearshore recreation, similar to the Lease Modification Project analyzed in the 2017 Supplemental EIR, and impacts to beach and nearshore recreation would be less than significant.

The new linear diffuser design would encompass a smaller benthic footprint and would be at a similar submerged depth as the Lease Modification Project. Construction of the new linear diffuser would involve the same type of construction equipment, including marine vessels, and would occur over a similar amount of time as the Lease Modification Project construction.

Anchoring ~~an additional~~ a marine vessel near the diffuser construction area could conflict with recreational boating, diving, and fishing activities in the offshore area. However, the anchoring of the tug boat would occur near the construction site and the anchored barge that was analyzed in the 2017 Supplemental EIR. This addition would only incrementally increase the potential impediment to recreational activities in the area. Furthermore, the recreational access to the construction area would be precluded during construction while recreational access to the vast surrounding ocean areas would remain open.

As specified in the 2017 Supplemental EIR, the Lease Modification Project would already be required to have the U.S. Coast Guard issue a Local Notice to Mariners containing information on the locations, times, and details of construction activities that may pose potential hazards (MM TRM-1 in the 2017 Supplemental EIR). Construction of the new linear diffuser design would adhere to the same time of day (7 a.m. to 6 p.m., 7 days a week) and time of year schedule restrictions (approximately 2 months) as required for the Lease Modification Project in the 2017 Supplemental EIR, further reducing potential conflicts with recreational uses in the vicinity of construction activity. Therefore, the effect of the new linear diffuser on recreation would be minimal and short-term. Any impacts from construction of the new linear diffuser on recreational boat access would be less than significant.

The removal of riprap in the construction area could disturb fish and invertebrates that could be attracted to the riprap. However, this would only result in a temporary benthic impact as sediment would likely be naturally relocated by ocean currents and the riprap replaced before the end of construction. Additionally, construction activities for the new linear diffuser would involve less permanent benthic impact than the amount previously analyzed for the Lease modification Project in the 2017 Supplemental EIR. Fish and invertebrates are also anticipated to return to the riprap after it is replaced and access to the diffuser construction area would remain closed to recreational fishing. Therefore, there would only be a minor, short-term effect on fishing recreation in the immediate vicinity of the diffuser construction area and impacts would be less than significant.

Construction of the new linear diffuser would not create a new significant impact to recreation and would not cause a substantially more severe impact to recreation than those of the Lease Modification Project analyzed in the 2017 Supplemental EIR.

Operation

During operation, the new linear diffuser would be submerged below the ocean surface and no work crews would be permanently stationed at the diffuser location. Maintenance of the new linear diffuser is anticipated to be the same as the Lease Modification Project diffuser, which could involve quarterly dives to inspect and clean (as necessary) the external diffuser surfaces. Each maintenance dive is not anticipated to last more than one day at a time. The short-term,

intermittent, and minimal presence of these maintenance dives, in addition to the distance of maintenance activities from shore would result in less than significant impacts to beach, nearshore, and ocean recreation. Therefore, operation of the new linear diffuser would not create a new significant impact to recreation and would not cause a substantially more severe impact to recreation than those of the Lease Modification Project analyzed in the 2017 Supplemental EIR.

3.7 Marine Transportation

Previous Environmental Analysis Summary

The 2010 Subsequent EIR evaluated the potential for construction and operation of the HBDP to effect onshore transportation from the addition of worker vehicles and trucks to roadways. However, impacts from construction and operation of the HBDP to onshore transportation were determined to be less than significant.

The 2017 Supplemental EIR analyzed the Lease Modification Project's potential effect on offshore transportation. During construction of the Lease Modification Project, marine vessels would be transiting to and from the Port of Long Beach and would be anchored at the construction site. Similarly, during maintenance of the wedgewire screen intake, marine vessels would be used. The 2017 Supplemental EIR found that these activities would have a less than significant impact because they involved only minimal marine vessel trips, would implement public noticing of activities as a mitigation measure, and would preclude non-related marine vessel travel within the construction area.

Diffuser Modifications Analysis

Construction

As described in Section 2, Project Description, and similar to the Lease Modification Project analyzed in the 2017 Supplemental EIR, construction of the proposed new linear diffuser would increase marine vessel traffic between the Port of Long Beach and the diffuser construction site. Construction would include the use of a tug boat to deliver a 180-ton derrick barge to the diffuser construction area, as well as two to three additional marine vessels to transport work crews, supplies, and to monitor during construction.

Marine vessel use during construction of the new linear diffuser would be short-term, lasting approximately 2 months. Construction of the new linear diffuser would also be subject to the U.S. Coast Guard public noticing requirements established for the Lease Modification Project (see MM TRM-1 in the 2017 Supplemental EIR). As such, construction activities are not likely to substantially reduce the existing safety level of marine transportation in and around the Port of Long Beach or the construction area due to the small size of the construction marine vessels, small

number of trips per day, and use of established methods for coordinating marine vessel movement in these areas. Therefore, impacts would be less than significant and similar to those analyzed for the Lease Modification Project in the 2017 Supplemental EIR.

Construction of the new linear diffuser would not create a new significant impact to marine transportation and would not cause a substantially more severe impact to marine transportation than those of the Lease Modification Project analyzed in the 2017 Supplemental EIR.

Operation

After construction is completed, the top of the new linear diffuser would be submerged at the same or lower depth than the existing discharge tower on the HBGS discharge pipeline thereby allowing sufficient deep for typical marine vessels in the area to navigate the site (see Section 4.10 of the 2017 Supplemental EIR). Therefore, installation of the new linear diffuser would result in a less than significant impact due to obstruction of marine vessel traffic.

Maintenance of the diffuser would be similar to that described for the Lease Modification Project in the 2017 Supplemental EIR and could involve quarterly dive trips to ensure proper operation. Each maintenance dive is not anticipated to last more than one day at a time. The short-term, intermittent, and minimal presence of these maintenance dives would result in less than significant impacts to marine transportation. Therefore, operation of the new linear diffuser would not create a new significant impact to marine transportation and would not cause a substantially more severe impact to marine transportation than those of the Lease Modification Project analyzed in the 2017 Supplemental EIR.

4 CONCLUSION

The new linear diffuser modifications would require additional riprap to be imported that would result in a small increase in construction GHG emissions and criteria air pollutant emissions for one day during diffuser installation. Although construction GHG emissions would slightly increase with the new linear diffuser compared to the Lease Modification Project, they would not be substantially different than those for the Lease Modification Project, would not exceed the SCAQMD threshold, and would be 100% offset through implementation of the GHG Plan; therefore, resulting in a less than significant impact. Additionally, the new linear diffuser would have the same level of impacts from criteria pollutant emissions because it would not exceed the maximum daily construction emissions analyzed for the Lease Modification Project in the 2017 Supplemental EIR (that would occur during dredging).

The new linear diffuser design would decrease the permanent benthic impact of the diffuser, decrease the amount of entrained flow through the diffuser, and result in a smaller BMZ radius

that would reduce impacts to marine biological resources as well as hydrology and water quality compared to the Lease Modification Project.

Impacts to recreation, marine transportation, and noise would be similar to those analyzed for the Lease Modification Project in the 2017 Supplemental EIR, which were also determined to be less than significant.

Therefore, construction and operation of the new linear diffuser would not create any new significant impact and would not cause a substantially more severe impact than those of the Lease Modification Project analyzed in the 2017 Supplemental EIR.

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APPENDIX A

Air Quality and Greenhouse Gas Calculations

Vessel 1	
Name	Tug Boat
Vessel Type	Tug Boats
Main Engine Power (hp)	750
Engine Power Range (Low)	501
Engine Power Range (High)	750
Main Engine Power (kW)	559.275
Number of Main Engines	1
Auxiliary Engine Power (hp)	100
Engine Power Range (Low)	51
Engine Power Range (High)	120
Auxiliary Engine Power (kW)	74.57
Number of Auxiliary Engines	1
Main Engine Load Factor	0.5
Auxiliary Engine Load Factor	0.31
Main Engine Model Year	2009
Model Year Range (Low)	2009
Model Year Range (High)	2009
Main Engine Age	11
Main Engine Useful Life	21
Auxiliary Engine Model Year	2009
Model Year Range (Low)	2009
Model Year Range (High)	2009
Auxiliary Engine Age	11
Auxiliary Engine Useful Life	23
Brake Specific Fuel Consumption (g/hp-h)	184
Operational Time (hours/day)	3
Work Days (days)	1
Operational Year	2020

Emissions Factors

Vessel	Engines	ROG g/kW-h	NO_x g/kW-h	CO g/kW-h	SO_x g/hp-h	PM_{10} g/kW-h	$PM_{2.5}$ g/kW-h	CO_2 g/hp-h
Tug Boat	Main	0.68	5.1	3.73	0.0028	0.15	0.147	545.6
	Auxiliary	1.18	5.32	3.73	0.0028	0.22	0.2156	545.6

Engine Load Factor

	Tug Boat
Main	0.50
Auxiliary	0.31

Engine Useful Life

	Tug Boat
Main	21
Auxiliary	23

Engine Fuel Correction Factor

Vessel	Engines	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	CO_2
Tug Boat	**Main**	1	0.948	1	1	0.8	0.8	1
	Auxiliary	1	0.948	1	1	0.8	0.8	1

Engine Deterioration Factor

Vessel	Engines	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	CO_2
Tug Boat	**Main**	0.44	0.21	0.25	1	0.67	0.67	1
	Auxiliary	0.28	0.14	0.16	1	0.44	0.44	1

Time to and from Port of Lo	Tug Boat
Distance (nautical miles) [a]	16.5
Speed (knots) [b]	12
Time (hours)	1.375
Max. Daily Number of Trips to or from Port of Long Beach	2

a. Distance based on route from Port of Long Beach to 0.5 miles offshore of desalination plant.

b. Assumed that the Santa Barbara Channel Vessel Speed Speed Reduction Trial would apply as slowest speed.

Maximum Daily Emissions From Daily Travel To/From Port

		pounds/day					
Vessel	**Engines**	**ROG**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Tug Boat	Main	1.42	9.10	7.15	0.01	0.27	0.27
	Auxiliary	0.19	0.75	0.56	0.00	0.03	0.03
Total		1.61	9.85	7.71	0.01	0.30	0.30

Maximum Annual Emissions From Daily Travel To/From Port

Vessel	**Engines**	**MT/day**
		CO_2
Tug Boat	Main	2.57
	Auxiliary	0.15
Total		2.73

HB Desal - Wedgewire & Diffuser Install (Other Days) - South Coast AQMD Air District, Annual

HB Desal - Wedgewire & Diffuser Install (Other Days)

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	592.74	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted SCE CO2 Intensity based on 33% RPS by 2020

Land Use - Off shore construction of intake wedgewire screens and discharge diffuser

Construction Phase - Last day of wedgewire screen and diffuser installation construction

Off-road Equipment - Crane on barge - assumed to operate 6 hours per day. Underwater rivet busters and diamond saws assumed to be electrically powered

Trips and VMT - 8 one-way worker trips (4 round trips assuming each worker would drive own vehicle)

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	1.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	592.74
tblTripsAndVMT	HaulingTripNumber	0.00	38.00

tblTripsAndVMT	WorkerTripNumber	0.00	8.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	1.6000e-004	5.3500e-003	1.2100e-003	2.0000e-005	3.7000e-004	2.0000e-005	3.9000e-004	1.0000e-004	2.0000e-005	1.2000e-004	0.0000	1.4733	1.4733	1.0000e-004	0.0000	1.4758
Maximum	**1.6000e-004**	**5.3500e-003**	**1.2100e-003**	**2.0000e-005**	**3.7000e-004**	**2.0000e-005**	**3.9000e-004**	**1.0000e-004**	**2.0000e-005**	**1.2000e-004**	**0.0000**	**1.4733**	**1.4733**	**1.0000e-004**	**0.0000**	**1.4758**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	1.6000e-004	5.3500e-003	1.2100e-003	2.0000e-005	3.7000e-004	2.0000e-005	3.9000e-004	1.0000e-004	2.0000e-005	1.2000e-004	0.0000	1.4733	1.4733	1.0000e-004	0.0000	1.4758
Maximum	**1.6000e-004**	**5.3500e-003**	**1.2100e-003**	**2.0000e-005**	**3.7000e-004**	**2.0000e-005**	**3.9000e-004**	**1.0000e-004**	**2.0000e-005**	**1.2000e-004**	**0.0000**	**1.4733**	**1.4733**	**1.0000e-004**	**0.0000**	**1.4758**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	7-16-2020	9-30-2020	0.0038	0.0038
		Highest	0.0038	0.0038

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building Construction	Building Construction	7/16/2020	7/16/2020	5	1	Screen/Diffuser Construction

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	0	8.00	0.00	38.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.5000e-004	5.3300e-003	1.0600e-003	1.0000e-005	3.3000e-004	2.0000e-005	3.4000e-004	9.0000e-005	2.0000e-005	1.1000e-004	0.0000	1.4338	1.4338	1.0000e-004	0.0000	1.4363
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	1.0000e-005	1.5000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0395	0.0395	0.0000	0.0000	0.0395
Total	**1.7000e-004**	**5.3400e-003**	**1.2100e-003**	**1.0000e-005**	**3.7000e-004**	**2.0000e-005**	**3.8000e-004**	**1.0000e-004**	**2.0000e-005**	**1.2000e-004**	**0.0000**	**1.4733**	**1.4733**	**1.0000e-004**	**0.0000**	**1.4758**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.5000e-004	5.3300e-003	1.0600e-003	1.0000e-005	3.3000e-004	2.0000e-005	3.4000e-004	9.0000e-005	2.0000e-005	1.1000e-004	0.0000	1.4338	1.4338	1.0000e-004	0.0000	1.4363
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	1.0000e-005	1.5000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0395	0.0395	0.0000	0.0000	0.0395
Total	**1.7000e-004**	**5.3400e-003**	**1.2100e-003**	**1.0000e-005**	**3.7000e-004**	**2.0000e-005**	**3.8000e-004**	**1.0000e-004**	**2.0000e-005**	**1.2000e-004**	**0.0000**	**1.4733**	**1.4733**	**1.0000e-004**	**0.0000**	**1.4758**

HB Desal - Wedgewire & Diffuser Install (Other Days)

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	592.74	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted SCE CO2 Intensity based on 33% RPS by 2020

Land Use - Off shore construction of intake wedgewire screens and discharge diffuser

Construction Phase - Last day of wedgewire screen and diffuser installation construction

Off-road Equipment - Crane on barge - assumed to operate 6 hours per day. Underwater rivet busters and diamond saws assumed to be electrically powered

Trips and VMT - 8 one-way worker trips (4 round trips assuming each worker would drive own vehicle)

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	1.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	592.74
tblTripsAndVMT	HaulingTripNumber	0.00	38.00

tblTripsAndVMT	WorkerTripNumber	0.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3248	10.3657	2.3847	0.0304	0.7534	0.0340	0.7875	0.2057	0.0325	0.2382	0.0000	3,277.2044	3,277.2044	0.2164	0.0000	3,282.6145
Maximum	**0.3248**	**10.3657**	**2.3847**	**0.0304**	**0.7534**	**0.0340**	**0.7875**	**0.2057**	**0.0325**	**0.2382**	**0.0000**	**3,277.2044**	**3,277.2044**	**0.2164**	**0.0000**	**3,282.6145**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3248	10.3657	2.3847	0.0304	0.7534	0.0340	0.7875	0.2057	0.0325	0.2382	0.0000	3,277.2044	3,277.2044	0.2164	0.0000	3,282.6145
Maximum	**0.3248**	**10.3657**	**2.3847**	**0.0304**	**0.7534**	**0.0340**	**0.7875**	**0.2057**	**0.0325**	**0.2382**	**0.0000**	**3,277.2044**	**3,277.2044**	**0.2164**	**0.0000**	**3,282.6145**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building Construction	Building Construction	7/16/2020	7/16/2020	5	1	Screen/Diffuser Construction

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	0	8.00	0.00	38.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day				
Hauling	0.2886	10.3414	2.0577	0.0295	0.6640	0.0333	0.6974	0.1820	0.0319	0.2139	3,185.6510	3,185.6510	0.2138		3,190.9953
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Worker	0.0362	0.0243	0.3271	9.2000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243	91.5534	91.5534	2.6300e-003		91.6192
Total	**0.3248**	**10.3657**	**2.3847**	**0.0304**	**0.7534**	**0.0340**	**0.7875**	**0.2057**	**0.0325**	**0.2382**	**3,277.2044**	**3,277.2044**	**0.2164**		**3,282.6145**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2886	10.3414	2.0577	0.0295	0.6640	0.0333	0.6974	0.1820	0.0319	0.2139		3,185.6510	3,185.6510	0.2138		3,190.9953
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0362	0.0243	0.3271	9.2000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243		91.5534	91.5534	2.6300e-003		91.6192
Total	**0.3248**	**10.3657**	**2.3847**	**0.0304**	**0.7534**	**0.0340**	**0.7875**	**0.2057**	**0.0325**	**0.2382**		**3,277.2044**	**3,277.2044**	**0.2164**		**3,282.6145**

HB Desal - Wedgewire & Diffuser Install (Other Days)

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	592.74	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted SCE CO2 Intensity based on 33% RPS by 2020

Land Use - Off shore construction of intake wedgewire screens and discharge diffuser

Construction Phase - Last day of wedgewire screen and diffuser installation construction

Off-road Equipment - Crane on barge - assumed to operate 6 hours per day. Underwater rivet busters and diamond saws assumed to be electrically powered

Trips and VMT - 8 one-way worker trips (4 round trips assuming each worker would drive own vehicle)

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	1.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	592.74

tblTripsAndVMT	HaulingTripNumber	0.00	38.00
tblTripsAndVMT	WorkerTripNumber	0.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3364	10.5008	2.5096	0.0298	0.7534	0.0345	0.7880	0.2057	0.0330	0.2387	0.0000	3,212.6418	3,212.6418	0.2255	0.0000	3,218.2795
Maximum	**0.3364**	**10.5008**	**2.5096**	**0.0298**	**0.7534**	**0.0345**	**0.7880**	**0.2057**	**0.0330**	**0.2387**	**0.0000**	**3,212.6418**	**3,212.6418**	**0.2255**	**0.0000**	**3,218.2795**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3364	10.5008	2.5096	0.0298	0.7534	0.0345	0.7880	0.2057	0.0330	0.2387	0.0000	3,212.6418	3,212.6418	0.2255	0.0000	3,218.2795
Maximum	**0.3364**	**10.5008**	**2.5096**	**0.0298**	**0.7534**	**0.0345**	**0.7880**	**0.2057**	**0.0330**	**0.2387**	**0.0000**	**3,212.6418**	**3,212.6418**	**0.2255**	**0.0000**	**3,218.2795**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building Construction	Building Construction	7/16/2020	7/16/2020	5	1	Screen/Diffuser Construction

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	0	8.00	0.00	38.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2969	10.4742	2.2151	0.0289	0.6640	0.0339	0.6979	0.1820	0.0324	0.2144		3,127.0126	3,127.0126	0.2231		3,132.5889
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0395	0.0266	0.2945	8.6000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243		85.6292	85.6292	2.4600e-003		85.6906
Total	**0.3364**	**10.5008**	**2.5096**	**0.0298**	**0.7534**	**0.0345**	**0.7880**	**0.2057**	**0.0330**	**0.2387**		**3,212.6418**	**3,212.6418**	**0.2255**		**3,218.2795**

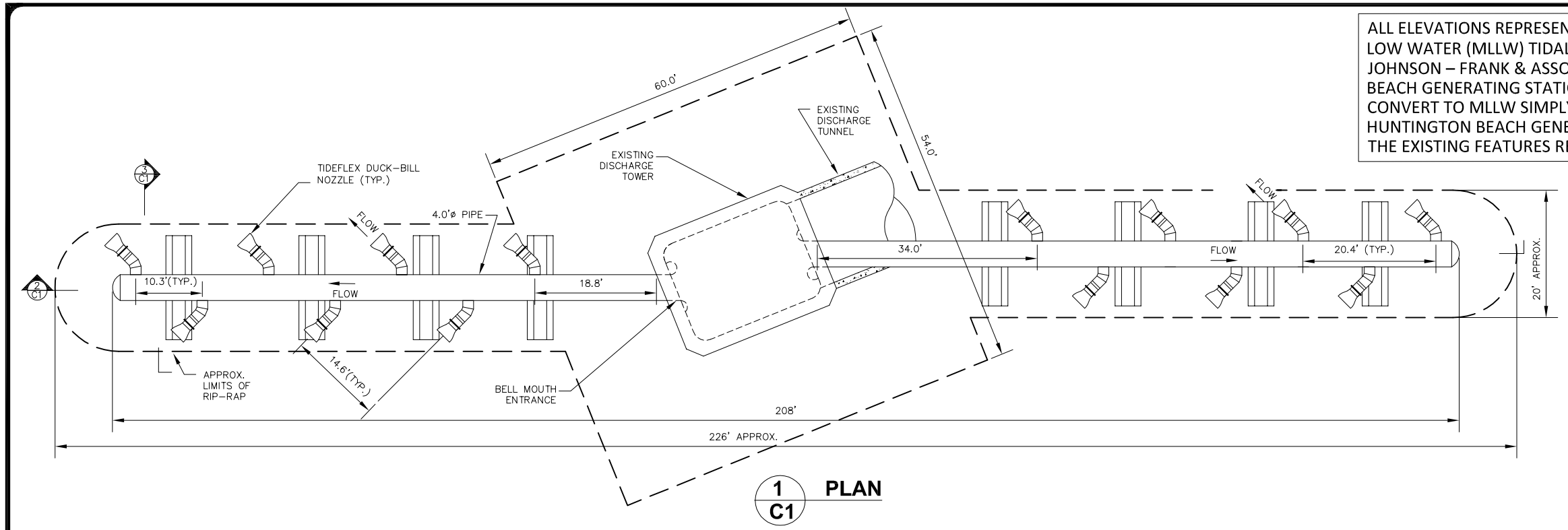
Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2969	10.4742	2.2151	0.0289	0.6640	0.0339	0.6979	0.1820	0.0324	0.2144		3,127.0126	3,127.0126	0.2231		3,132.5889
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0395	0.0266	0.2945	8.6000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.2000e-004	0.0243		85.6292	85.6292	2.4600e-003		85.6906
Total	**0.3364**	**10.5008**	**2.5096**	**0.0298**	**0.7534**	**0.0345**	**0.7880**	**0.2057**	**0.0330**	**0.2387**		**3,212.6418**	**3,212.6418**	**0.2255**		**3,218.2795**

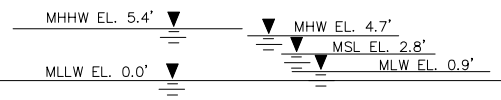
APPENDIX B

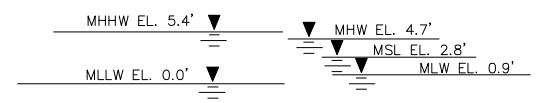
Figures

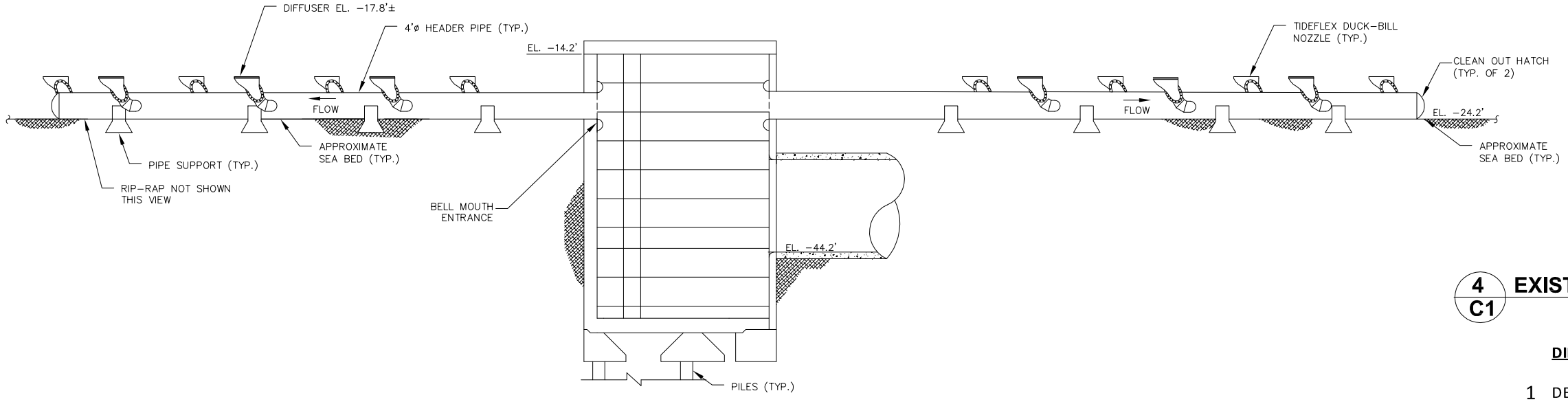
ALL ELEVATIONS REPRESENTED ON THIS DRAWING REFER TO THE MEAN LOWER LOW WATER (MLLW) TIDAL DATUM. BASED ON A SURVEYOR'S LETTER FROM JOHNSON – FRANK & ASSOCIATES, INC. DATED JULY 13, 2016 THE HUNTINGTON BEACH GENERATING STATION DRAWING ELEVATION DATUM IS IN NAVD88 AND TO CONVERT TO MLLW SIMPLY ADD 0.18 FT TO NAVD88.
HUNTINGTON BEACH GENERATING STATION DRAWING 546937 IS THE BASIS FOR THE EXISTING FEATURES REPRESENTED ON THIS DRAWING.



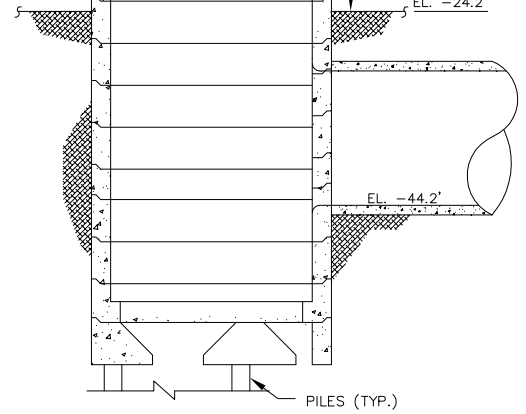
1 C1 **PLAN**



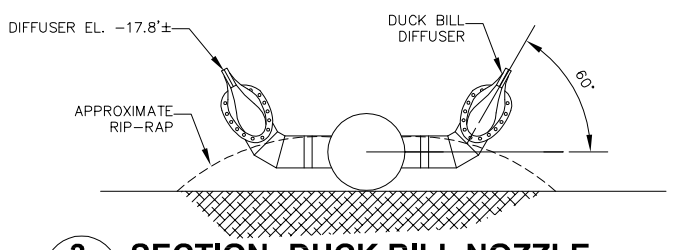




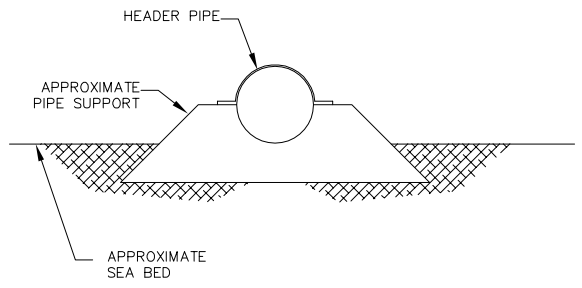
2 C1 **SECTION**



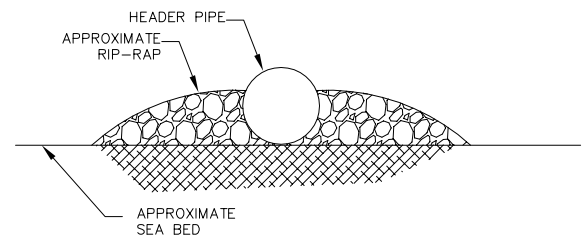
4 C1 **EXISTING DISCHARGE TOWER - ELEVATION**



3 C1 **SECTION- DUCK BILL NOZZLE**



3 C1 **SECTION- PIPE SUPPORT**



3 C1 **SECTION- RIP-RAP**

DIFFUSER DESIGN ASSUMPTIONS

		FLOW (MGD)	SALINITY (PPT)
1	DESIGN FLOW CONDITIONS		
	AVERAGE ANNUAL	56.7	63.1
	PEAK DAILY	62.5	62.4
	START UP & MAINTENANCE	127	33.5

2 14 DISCHARGE PORTS
3 NOZZLE.: TIDEFLEX TBD, EQUIVALENT DIA.: 1.28'
4 ANGLE FROM HORIZONTAL: 60 DEG.
5 PORT DISCHARGE ELEVATION: -17.8' (MLLW)
6 APPROXIMATE RIP-RAP AREA: 6375 FT^2

No.	REVIEW / Revision Description	Drwn	Chkd	Date
0		BJM		11/6/2018

Drwn By: BJM
Desg By: GEH
Chkd By: BJM
Aprvd By: GA
Date: -

ALDEN RESEARCH LABORATORY, INC.
30 SHREWSBURY ST, HOLDEN, MA
(508) 829-6000, WWW.ALDENLAB.COM

POSEIDON WATER
HUNTINGTON BEACH DESALINATION FACILITY
BRINE DISCHARGE LINEAR DIFFUSER

Job Number: POSEIDON

Drawing No: C-1

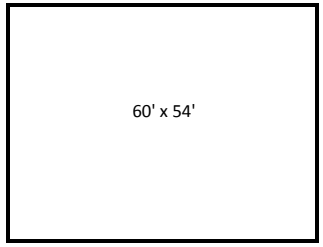
Sheet 1 *of* 1

Huntington Beach Desalination Project

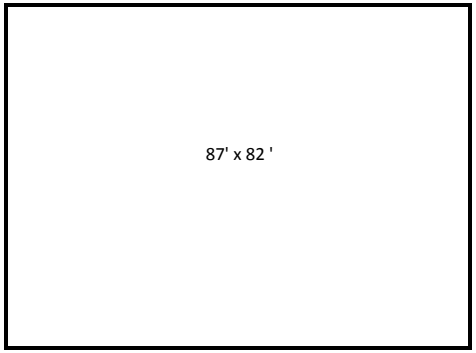
Discharge Struture Layout Schematic

SLC SEIR Figure 2-8 Exisitng and Proposed Discharge Structure Foot Print with Rip-Rap

Exisitng Discharge Tower Foot Print with Rip-Rap

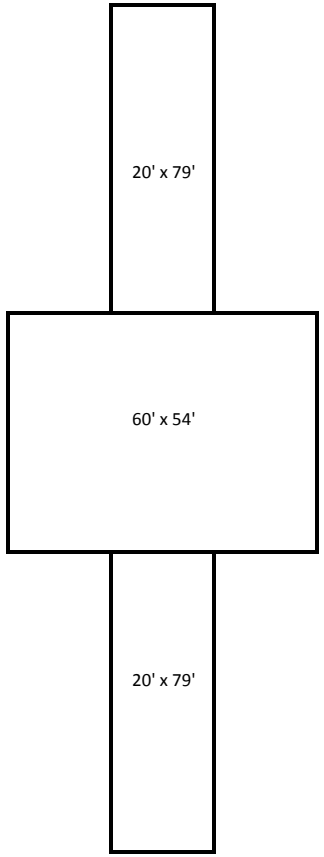


Proposed Discharge Diffuser Foot Print with Rip-Rap



SLC SEIR Benthic Impact from Discharge Structure	
Exisitng Impact Area	3,240 square feet
Proposed Impact Area	7,134 square feet
Increase in Impact Area	3,894 square feet
Temporary Impact from Discharge Structure Construction	
Anchor disturbance only	

Proposed 14-Port Linear Diffuser Structure Foot Print with Rip-Rap
Nov-18



SLC SEIR vs. Proposed 14 Port Linear Diffuser Benthic Impact from Discharge Structure	
SLC Proposed Impact Area	7134 square feet
Proposed 14-Port Linear Impact Area	6,375 square feet
Decrease in Impact Area	759 square feet
Temporary Impact from Discharge Structure Construction	
Anchor disturbance and Seabed leveling	

Note: The layout is a schematic. See Figure 1 for more detail.