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Mr. Christopher Huitt
Project Manager
California State Lands Commission
100 Howe Avenue, Suite 100
Sacramento, CA 95825

January 3, 2012

RE: Comments Revised Draft Environmental Impact Report – San Francisco Bay and Delta Sand Mining

Dear Mr. Huitt:

Attached and enclosed please find comments on the Revised Draft Environmental Report for San Francisco Bay and Delta Sand Mining (the RDEIR) from Hanson Aggregates / Hanson Marine Operations and Jerico Products / Morris Tug and Barge. This letter outlines the content and organization of these comments.

Our comments address several areas of the RDEIR. Detailed comments for each of these areas are attached, including supporting data and calculations where referenced. The organization of these detailed comments includes the following documents:

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I. Executive Summary / Project Description – Leases Renewal Characterization
II. Executive Summary / Project Description – Update and Correction for Jerico Products Mining Methods
III. Comments on Section 4.1 Biological Resources – Analysis and Impacts
IV. Comments on Section 4.1 Biological Resources – Mitigation
V. Comments on Air Impacts, Mitigation and Conclusions
   a. Appendix 1 Comparison of Average Mining Volumes from 2009 - 2011 to Proposed 2002 – 2007 Baseline
VI. Comments on Other Required CEQA Sections and Environmentally Superior Alternative
VII. Comments regarding Mineral Resources and Hydrology and Water Quality
VIII. Comments on Necessity and Feasibility of Proposed Mitigation Measures

Please contact me if you have any questions or wish to discuss these matters in more detail.

Sincerely,

Mike Roth
Vice President, Region West
Lehigh Hanson, Inc.

CC: Mr. Mike Bishop, Hanson Aggregates / Hanson Marine Operations
Mr. Lee Cover, Lehigh Hanson Region West
Mr. Greg Knapp, Lehigh Hanson Region West
Dr. Chuck Hanson, Hanson Environmental
Dr. Barry Keller, PhD, Hydrogeophysicist
Mr. John Gillan, Deputy General Counsel, Lehigh Hanson, Inc.
Mr. Christian Lind, Jerico Products / Morris Tug and Barge
Mr. William Butler, Jerico Products / Morris Tug and Barge Consultant

Attachments

I. Executive Summary / Project Description – Characterization of Leases.

The RDEIR should clarify and emphasize that the proposed project is a renewal of leases for an existing, ongoing activity and not simply issuance of "new" leases that implies a new activity.

In the Executive Summary, Introduction and Project Description sections of the Revised Draft EIR (RDEIR), the renewals of the mineral extraction leases with the California State Lands Commission (CSLC) for sand mining are characterized as issuance of proposed "new" leases. The existing leases provide for one 10-year renewal, as follows:

> *Lessee is granted a right to renew this Lease for one (1) additional period of ten (10) years upon terms and conditions including, but not limited to, modification of the royalty or rental provisions, or any other provisions in a manner which, in the opinion of Lessor, will reasonably protect the interests of Lessor. Such renewal shall be subject to all applicable statutes and regulations then in effect including, but not limited to, a review and analysis under the California Environmental Quality Act and other pertinent environmental statutes and regulations.*

While we understand that, for business purposes, the renewal with renegotiation of business and other terms effectively may be called a "new" lease, we want to make sure that the RDEIR appropriately emphasizes that the process is a renewal of an existing, ongoing activity that has been occurring for decades – NOT the approval of a new activity. The representation of the process as issuance of "new" leases occurs in several places in the Executive Summary, Introduction and Project Description, and may confuse the reader. The Final EIR should consistently reflect the process as a renewal of existing leases. L-2

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II. Executive Summary / Project Description – Update and Correction for Jerico Products Mining Methods.

Jerico Products has slightly modified its mining methodology during the period of the EIR process, employing the potholing mining method exclusively and making modifications to pumping methods which increase efficiency and reduce impacts.

Both the Executive Summary and Project Description section of the revised DEIR include descriptions detailing the equipment and mining methods employed by the sand mining companies. During the time that the RDEIR was drafted, circulated, revised and recirculated, Jerico Products has slightly modified its mining method and equipment, which has resulted in increased efficiency that ultimately reduces environmental impacts, particularly associated with biological resources.

The revised DEIR correctly describes Jerico's mining as mainly employing the stationary potholing method. However, some of the descriptions of the equipment and pumping capacity need to be updated in order to accurately characterize current conditions. A brief summary of the references to be updated is as follows:

- The RDEIR describes pumping capacities of the sand mining barges varying from *"approximately 5,000 to 15,000 gallons per minute."* (Revised DEIR, p. ES-5 line 25 and p. 2-8 line 33). Jerico's pump operates at approximately 4,000 gallons per minute.

- The RDEIR describes the hydraulic suction system equipment utilized by the applicants as: L-3

  > *"a drag arm equipped with a drag head (Figures 2-4a and 2-4b), generally mounted on the side of the barge. The drag head is generally fitted with a "grizzly" to screen out oversized material. A typical drag head used in sand mining, fitted with a grizzly, is shown in Figure 2.5"* (Revised DEIR, p. 2-11 line 6-9)

  While this description may generally be the case for Hanson, Jerico Products has modified their suction system, and currently does NOT utilize a drag head per se; a grizzly screen is simply fitted on the end of the 14-inch suction pipe, and the pipe is inserted into the substrate during mining.

  These updates and corrections also need to be applied to the description of the stationary potholing method detailed by the RDEIR on page 2-17, line 1-14.

- The RDEIR describes the sand slurry created in sand mining as *"a slurry of approximately 15 percent sand and 85 percent water."* (Revised DEIR p. 2-11 line 24-25) While this may be accurate for the moving pothole method applying to the Hanson operations, it should be noted that Jerico's stationary potholing method typically yields slurries made up of approximately **25 percent sand and 75 percent water**.

These updates and corrections are important, as they effectively reduce the amount of bottom area disturbance from sand mining activities, and reduce the overall amount of water pumped during sand mining operations and thereby reduce the risk of entrainment. These reductions directly reduce any impacts associated with biological resources.

L-3 cont.

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III. Comments on Section 4.1 Biological Resources – Analysis and Impacts

Biological Impacts Are Overstated in the RDEIR and the Appendix E Entrainment Study, based on faulty assumptions that effectively multiply their projections of impacts.

As reflected in the discussion below, the RDEIR's entrainment analysis is highly speculative and, we believe, inconsistent with prior studies and actual data taken from San Francisco and Suisun Bay studies. For example, Hanson Environmental prepared an August 2006 entrainment study for Hanson Aggregates and Jerico pursuant to the requirements of the National Marine Fisheries Service 2006-2007 Biological/Conference Opinion. The 2006 entrainment study produced markedly different results, with no identified entrainment of longfin or delta smelt. Furthermore, this analysis is fundamentally inconsistent with CEQA requirements relating to baseline. L-4

A. The Revised DEIR Impact Analysis Uses the Incorrect Baseline.

Sand mining has been conducted in the Bay and Delta for decades, and the proposed project is a continuation of these prior activities within the same lease areas and using the same basic mining equipment and methods as were in place under the leases that were in effect from 2002-2007, the baseline period for the RDEIR. The RDEIR states:

> "*the impact analysis is limited to examining the differences between the proposed sand mining operations and the sand mining that was occurring, on average, under the lease agreement when the NOP was issued*". (RDEIR p. 4-3, line 7-9)

However, the RDEIR relies on results of analyses presented in Appendix E (AMS 2009). Review of the AMS methods indicates that the entrainment analyses present loss estimates based on the proposed entire level of sand mining and **not** the incremental change between the proposed mining and baseline conditions. The Entrainment Study, and the resulting RDEIR impacts analysis, inexplicably portray the project's entrainment impacts as an absolute loss rather than an incremental change from the baseline conditions. Put another way, they assume zero sand mining production (with a corresponding assumption regarding entrainment) for the baseline condition, and thereby characterize all the entrainment that the study projects, albeit speculatively, as associated with the project. L-5

In other words, both the Entrainment Study and the RDEIR's impact analysis ignore the fact that this project involves a proposed continuation of an existing activity. This is a fundamental flaw in the entrainment analysis. CEQA requires these circumstances to be accounted for in the RDEIR impacts analysis by setting the proper baseline. To summarize, the RDEIR is required to analyze the change in the environment that would occur under the project. That must be done here by comparing conditions that would occur under the proposed project with the conditions occurring at the baseline. This would require the analysis of incremental changes in projected entrainment losses, if any, between the baseline versus projected entrainment under the proposed project level of sand mining, by region.

Many of the technical issues and assumptions discussed in our detailed comments below would be less significant if the impacts analysis were presented as the incremental change between the 2002-2007 baseline and proposed project operations because the same assumptions would be

included in the numerator and denominator of the relative comparison. Accordingly, the analysis and presentation of results should reflect the incremental change in risk of entrainment, and these incremental results used in developing the EIR findings regarding significance of impacts and the conclusions regarding the necessity and scope of mitigation measures. L-5 cont.

B. The Entrainment Study, and the Resulting RDEIR Analyses, Are Based on Speculation and Questionable Methods that May Result in Inflated Projections of Entrainment.

The RDEIR and the Entrainment Study characterize the Entrainment Study as a literature-based assessment and evaluation.[1] In fact, the RDEIR discusses the difficulty and uncertainty in extrapolating results from one entrainment study to another location based on *"critical differences between the sites in terms of the physical conditions and biological community parameters"*. (RDEIR page 4.1-24, lines 20-21). In spite of this statement, however, the RDEIR and Entrainment Study go on to rely extensively on the results as if they were more accurate than they are, and extrapolates results from studies conducted in other areas directly to the Bay. Appendix E and Section 4.1 of the RDEIR should clearly articulate that the results of these analyses are hypothetical, worst case loss estimates that result in inflated projections of entrainment and overstate impacts. L-6

The following are specific comments about the entrainment analysis contained in the RDEIR and the AMS Entrainment Study contained in Appendix E:

- The RDEIR and the Entrainment Study characterize the Entrainment Study as a literature-based assessment and evaluation.[2] However, Appendix E and Section 4.1 of the RDEIR should clearly articulate that the results of these analyses are hypothetical, worst case loss estimates and that there has been no effort to validate these results against actual fish entrainment during actual sand mining events. Unfortunately, the RDEIR relies extensively on these estimates as if they were well-established and well-supported, which they are not. The projections regarding entrainment are so speculative that they do not provide an adequate basis for the significant conclusions the RDEIR reaches about effects of sand mining on fisheries, the necessity of mitigation and—based on a conclusion that impacts of longfin and delta smelt entrainment cannot be sufficiently reduced to a level of insignificance—the necessity of considering issuance of a statement of overriding considerations. L-7

- The Entrainment Study presents the loss estimates with four or five significant figures.[3] This method of presentation suggests a level of confidence and accuracy in the results that is clearly not justified by the data and methodology used here. The Entrainment Study and RDEIR should present a discussion of the level of uncertainty in the entrainment estimates and appropriate description of the level of confidence that can be placed in the results. As currently drafted, the Entrainment Study should be recognized as having a very high level of variability and uncertainty. L-8

[1] RDEIR at 4.1-25; Appendix E at E-8

[2] RDEIR at 4.1-25; Appendix E at E-8

[3] Appendix E at E-8.

To demonstrate with an example, the RDEIR estimates entrainment losses of sand lance as high as 700,000 fish per year—based on extrapolation of fish densities from sampling conducted in Grays Harbor Washington. The key assumption in these analyses is "**if** densities are comparable between the two locations" meaning the densities between Grays Harbor and San Francisco Bay. If these analyses are to be included in the FEIR, support should be provided for the assumptions that the underlying data are representative, appropriate for use in this analysis, provide meaningful estimates of actual entrainment losses, or should even be included in the documents or impact analyses. In the absence of scientific support that these extrapolations have justification and are reasonable or representative of actual losses resulting from sand mining within the Bay-Delta system they should be deleted from the entrainment analysis and RDEIR impact analysis. Please note that this comment applies to the entire fishery analysis presented in the RDEIR and Appendix E. It is not limited to the example used for sand lance alone (see comments below). L-8 cont.

- Fish, crab, and shrimp entrainment loss estimates presented in Appendix E and used as the basis for the RDEIR impact analysis rely on fishery sampling data collected by the California Department of Fish and Game (CDFG) Bay Fishery Study using an otter trawl for sampling. The otter trawl is a net that has been specifically designed to effectively collect fish and macroinvertebrates living on or near the bottom. The trawl moves horizontally across the bottom and has sufficient width and height to collect fish and macroinvertebrates that have been startled by the net and are attempting to behaviorally avoid the net. In contrast, the drag head used in sand mining is small (approximately 3 feet wide, or, in the case of Jerico, a 14-inch pipe) and is oriented vertically into the sand substrate. The entrainment study's calculations assume that gear collection efficiency is the same between the trawl and drag head. In contrast to the otter trawl, these species are able to behaviorally avoid the sand mining drag head. Studies in other regions have demonstrated that behavioral avoidance of a drag head substantially reduces (by 80% or more) the numbers of fish actually entrained. Accordingly, rather than extrapolating directly from the otter trawl data, the entrainment study's entrainment loss estimates for the sand mining methods used here should include a correction factor to account for behavioral avoidance of the sand mining drag head. As presented in the current version of the entrainment study, the estimated losses represent an exaggerated, worst case and are not representative of the actual risk of entrainment. L-9

- Estimates of entrainment (Appendix E) of the larval lifestage of species such as Pacific herring also are based on unsupported extrapolation. The referenced CDFG Bay Study discontinued collecting fish eggs and larvae and other planktonic organisms in the late 1980's. The entrainment estimates used in the DEIR were based on data on the seasonal distribution and density of planktonic lifestages collected as part of studies conducted at the Potrero Power Plant and the proposed Marin Desalination Project. The Potrero Power Plant is located in a backwater cove along the San Francisco waterfront in south San Francisco Bay. The Entrainment Study provides no technical support for the proposition that the species and densities of planktonic organisms observed at the power plant are representative or appropriate to use in estimating entrainment during sand mining that takes place in Central Bay—where tidal current patterns, habitat conditions, and other parameters are substantially different from those at the power plant site. The analysis O-10

should be revised to address these uncertainties and to clearly acknowledge that these are hypothetical estimates that may not be representative of the actual effects of entrainment resulting from sand mining.

An alternative and likely more credible approach which could have been used in the analysis would involve a comparison of entrainment results from the Potrero Power Plant made in the late 1970's with data from the CDFG surveys in the Central Bay where sand mining occurs when plankton sampling was actually occurring. The Entrainment Study should either include such a comparative analysis or discuss the high level of uncertainty in the entrainment estimates as presented. If it is confirmed that the data from the power plant site are not representative of the risk of entrainment in central San Francisco Bay where mining actually occurs the entrainment estimates should be deleted from the impact analysis. L-10

- As discussed above, the entrainment loss estimates for planktonic lifestages (Appendix E) also were based on extrapolation of results of plankton collections at the Marin Municipal Water District proposed desalination project site. The site is located in north Bay on the Marin coast adjacent to the Richmond-San Rafael Bridge. Data from this site was used to estimate entrainment losses from sand mining upstream in Suisun Bay. Habitat types are substantially different between these two regions with one of the greatest differences being salinity. Salinity in the Suisun Bay area is low while salinity at the desalination project site is substantially higher. There are substantial differences in the species composition and densities of fish that occur in response to salinity gradients within the estuary. Based on the differences in salinity and other habitat characteristics it is unlikely that the species composition and seasonal densities of planktonic lifestages of fish and other organisms in the vicinity of the proposed desalination plant are representative of the planktonic fish community in Suisun Bay where sand mining occurs. No data are presented in the appendix or RDEIR to support the assumption that the species composition and densities of larval fish and other planktonic organisms are representative and appropriate for use in estimating entrainment risk associated with sand mining. The appendix uses caveats to characterize these estimates such as "if correct" but provides no discussion regarding the application of these data, the levels of uncertainty, or the magnitude of error associated with these fundamental assumptions. The Appendix and RDEIR should be revised to address these issues. Unless the data from the desalination project site are found to be representative of the risk of entrainment in Suisun Bay where mining actually occurs the entrainment estimates should be deleted from the impact analysis. L-11

- The Entrainment Study and RDEIR assert that "Bay-wide, approximately 1.2 million <u>shrimp are entrained</u> by sand mining activities" (emphasis added). These are hypothetical estimates that have no verification. The assumptions used in deriving the loss estimates have not been tested and there are a number of reasons to believe that the approach and data used in these estimates substantially overestimate losses. However, the Entrainment Study implies that this impact is actually occurring. The Entrainment Study and RDEIR should be revised to reflect the uncertainty in these estimates and should explain clearly that the results do not necessarily represent actual losses. <u>This comment applies throughout Appendix E and the RDEIR</u>. L-12

- Appendix E and the RDEIR identify longfin smelt as the special status fish species that has the greatest risk of entrainment resulting from sand mining. As discussed above, there is a high level of uncertainty in the accuracy of these estimates. The Entrainment Study and RDEIR should be revised to discuss the high level of uncertainty in these estimates based upon the type of analysis performed here. The RDEIR also should acknowledge the fact that they are hypothetical estimates that do not represent actual documented losses. L-13

- The Entrainment Study acknowledges that the entrainment loss estimates should be considered as "order-of-magnitude" estimates.[4] However, this characterization of the confidence and level of accuracy of the results of the analysis is inconsistent with the presentation of entrainment losses to five significant figures (e.g., midshipman 27,393, English sole 22,346, etc.). The presentation and discussion of results in the RDEIR improperly implies a much higher level of confidence in the results than is justified by the analysis. In fact, one of the RDEIR's most significant conclusions regarding potential impacts to longfin smelt is based on these projections, i.e., that there is a level of entrainment that cannot be mitigated to a level of less than significant. Appendix E and the RDEIR should be revised to reflect the actual level of confidence supported by the available data and assumptions used in the analysis. L-14

- As discussed above for fish that would behaviorally avoid entrainment into the suction head, crabs and shrimp also have the ability to detect and avoid entrainment by an approaching drag head that is 3 feet wide (or, in the case of Jerico, a 14-inch pipe). The analysis currently assumes that the capture efficiency of the CDFG otter trawl is the same as that for a sand mining drag head. There have been other studies that have compared captures in otter trawls and entrainment into suction dredges (similar but not the same as a sand mining drag head) that can be discussed and used to develop more realistic loss estimates. For example, Appendix E, page E-26 discusses the use of a regression approach in Grays Harbor to estimate the catch efficiency (slope of 0.27) between actual crab entrainment and catches in otter trawls. The Entrainment Study notes that these factors may be site specific and differ among equipment and therefore no correction was made to account for avoidance. Although even greater uncertainty exists, the Entrainment Study did extrapolate densities of sand lance from Grays Harbor to San Francisco Bay that are reported as part of the DEIR analysis. The Entrainment Study is not consistent in the treatment of data and results and should be revised. The Entrainment Study should, at a minimum, present a range of estimates that include the best information on issues like gear avoidance to give a better understanding of the effect of sand mining on entrainment risk. This flaw in the analysis would be corrected by using a relative comparison of results rather than the absolute estimated currently presented in the appendix and RDEIR. L-15

[4] Appendix E at E-15.

- Appendix E, Table 3-1, presents the results of the analysis as being extremely precise (e.g., 6,294,141 bay goby projected to be entrained in central Bay mining).[5] This form of presentation gives the appearance of a high degree of accuracy and confidence. To be consistent with the limitations of the entrainment study, these should be presented as "order-of-magnitude" estimates as discussed above or should provide a discussion of the level of confidence in these results. This applies to all of the data presented as results of the analysis. These tables and the results that they present should be re-structured to present the results in a meaningful way that reflects the actual uncertainty and number of assumptions needed for these estimates. L-16

- The Entrainment Study discusses results of a 2006 actual entrainment study conducted in various regions of the Bay-Delta.[6] The Entrainment Study describes the results for juvenile Chinook salmon as showing higher entrainment at night than during the day. The Entrainment Study does not discuss the fact that only 8 juvenile Chinook salmon were collected during the entire study, that all 8 salmon were collected using CEMEX equipment (a method of mining that relies on more "make-up" water pumped from higher in the water column), that the salmon were collected in a lease area in the Carquinez Straits that is not part of this project, that CEMEX is no longer mining sand from the Bay and is not part of the proposed project, and that *no juvenile salmon were collected in tests using Jerico/Morris Tug and Barge or Hanson equipment despite a higher sampling effort than that for CEMEX*. It should also be noted that these tests were performed by pumping 100% water at a depth several feet above the bottom and therefore would be expected to represent a worst-case entrainment risk. No statistically significant difference was detected for all fish collected between day and night sampling and yet this data is used as the basis for a very burdensome mitigation measure prohibiting nighttime dredging. This very limited data cannot justify the conclusion that entrainment is higher at night and the RDEIR's resulting recommended mitigation measure prohibiting nighttime sand mining. L-17

- The RDEIR concludes that the proposed sand mining will result in significant adverse impacts on green sturgeon, Chinook salmon, and steelhead (Impact BIO-9) and identifies mitigation measures it characterizes as necessary to reduce and avoid those impacts. In contrast, results of the entrainment loss calculations presented in Appendix E (page E-50 and E-51 for special status species) do not identify significant impacts to green sturgeon, Chinook salmon, or steelhead. This level of impact was specifically addressed in the 2006 NMFS Biological and Conference Opinion for Sand Mining. That Biological Opinion found that sand mining as authorized would not jeopardize the continued existence of any of the federally listed species—steelhead, Chinook salmon and green sturgeon. L-18

  Similarly, no steelhead were estimated to be entrained in any of the three mining areas. No green sturgeon were estimated to be entrained in Central Bay or Middle Ground and

[5] Appendix E at E-31.

[6] Appendix E at E-14, 52.

less than 1 was estimated to be entrained in Suisun Bay. The estimated losses would be even lower when viewed as an incremental change from the baseline conditions. These results do not support, and are not consistent with a conclusion of significant impacts to these species or a requirement for mitigation measures. Accordingly, the BIO-9 finding should be less than significant based on results presented in Appendix E and the associated mitigation measures (BIO-9a and BIO-9b) should be removed from the RDEIR, as discussed further in our comments on Biological Resources - Mitigation. L-18 cont.

<u>Other comments / corrections for Section 4.1:</u>

Here are additional comments / clarifications / corrections for Section 4.1 of the RDEIR:

- On page 4.1-2, lines 12-24, the RDEIR describes BCDC restrictions on mining in waters less than 30 feet deep in Central Bay to avoid potential impacts to shallow water habitat. The section should also describe the additional restrictions presented on pages 4.1-38 and 4.1-39 that are also permit terms and conditions designed to also reduce and avoid adverse impacts to aquatic habitat such as the ACOE prohibition on mining within 250 of any water less than 9 feet deep in Suisun Bay and 30 feet deep in Central Bay; no mining within 200 feet of a shoreline; restrictions on the locations and amounts of sand that can be mined each years; limitations on priming pumps when the drag head is less than 3 feet from the bottom. L-19

- The RDEIR reports that delta smelt *"lives primarily along the freshwater edge of the saltwater-freshwater interface (approximately 2 ppt salinity) of the Sacramento-San Joaquin Delta"*. (RDEIR page 4.1-17, line 8-9) Delta smelt are typically distributed from Cache Slough and the Sacramento River Deep Water Ship Channel (located upstream of Rio Vista) to the Benicia Bridge. Results of CDFG fishery surveys demonstrate that delta smelt at various points in their life history inhabit areas upstream and downstream of the 2ppt isohaline. L-20

- The RDEIR reports that the *"survival or abundance of multiple biological populations in the San Francisco Estuary, including delta smelt populations, is positively related to freshwater flow, a relationship which is described in terms of "X2"*. (RDEIR page 4.1-17, lines 10-16) Although freshwater flow and salinity gradients are important factors the relationships between flow and fish survival are typically weak, non-significant, and characterized by high variability and uncertainty. Similarly, relationships between X2 location in the late winter and spring that were thought to be significant for many fish and macroinvertabtrate species are no longer statistically significant when data from recent years is included in the analyses. Several factors have been hypothesized to account for these changes including the effects of introduced species, reductions in food supplies in recent years, etc. The discussion presented in the EIR is outdated and incomplete and suggests a much stronger predictive relationship with X2 than currently exists. L-21

- The RDEIR reports that delta smelt has been collected in large quantities in **<u>Central Bay</u>**. (RDEIR page 4.1-17, lines 21 and 27) Salinity in Central Bay typically exceeds the L-22

tolerance of delta smelt and therefore they do not inhabit Central Bay. Results of the CDFG fishery surveys presented in Tables 4.1-1 and 4.1-3 do not list collections of delta smelt in Central Bay. Delta smelt inhabit Suisun Bay and the western Delta but do not inhabit areas downstream of Carquinez Strait. L-22 cont.

- The RDEIR reports that the majority of longfin smelt inhabit Suisun Bay and occur to a lesser extent in Central Bay. (RDEIR page 4.1-18, line 19-20) When CDFG catches are appropriately weighted by the area that they represent (rather than the simple average CPUE presented in Table 4.1-1) the actual numbers of longfin smelt that inhabit Central and San Pablo Bays, particularly during the summer months, are substantially greater than Suisun Bay. Longfin smelt have a high salinity tolerance and are distributed widely in more marine areas of the bay system. Longfin smelt spawn in freshwater and the larvae pass downstream through Suisun Bay; however the majority of rearing occurs in the lower bays. L-23

- The RDEIR reports that splittail inhabit **Central Bay**. (RDEIR page 4.1-18, line 26) Splittail inhabit fresh and brackish waters in Suisun Bay and upstream. They do not inhabit the marine waters of Central Bay. Examination of the tables of CDFG fishery survey results presented in the RDEIR does not include splittail in Central Bay. The reference to Table 4.1-2 for Central Bay is incorrect and presents results for Suisun Bay based on midwater trawl sampling. L-24

- The RDEIR reports that the USFWS decision to delist splittail in 2003 *"despite a strong consensus by scientists that it should retain its protected status"* (RDEIR page 4.1-18, line 30-31) seems to be unsubstantiated and an inappropriate statement for the EIR. USFWS is currently reconsidering the listing status as part of a litigation settlement but no decision has been made regarding whether splittail should be listed. In response to favorable hydrologic conditions in 2011 juvenile splittail abundance was among the highest years on record. L-25

IV. Comments on Section 4.1 Biological Resources – Mitigation

The measure proposing to restrict mining activities relative to X2 is infeasible and may not be as effective as other measures designed to avoid, minimize, and mitigate the project's effects on delta and longfin smelt. Applicants are proposing a substitute measure with performance criteria to address the potential entrainment impacts identified under BIO-8a and BIO-8b.

Mitigation Measure BIO-8a as currently proposed would severely restrict mining activities for significant periods of time relative to the location of "X2." This location varies daily, can vary widely during this period, and can be downstream of all the mining lease areas for significant portions of this time period, effectively prohibiting ANY sand mining in the Suisun Bay area for significant portions of the year. In fact, during the past 5 years, mining in the Middleground and Suisun Associates lease areas would have been unrestricted only an average of 15% of the time. Such a measure would render the project operations in that area economically infeasible. (See further comments in Section VIII – Comments on Necessity and Feasibility of Mitigation Measures Proposed in RDEIR)

What is more, the X2 measure is not the most effective measure for minimizing and avoiding impacts to smelt. Indeed, as pointed out elsewhere in our comments, the relationship between the occurrence and survival of smelt populations and X2 is highly variable, uncertain, and statistically insignificant given current knowledge of the species. It is therefore a poor trigger for imposing avoidance measures that may have a severe impact on mining operations. Other avoidance and mitigation measures, however, may be available to address incidental take of delta and longfin smelt in a more effective and reliable manner but without the severe restrictions on sand mining operations (e.g., fish screens on mining equipment). The full range of avoidance, minimization, and mitigation measures that could reduce the risk of smelt entrainment losses to an acceptable level for CDFG to issue an ITP (i.e., no net loss) should be available for consideration rather than a prescription for limiting mining based on the location of X2. These alternative measures are not considered in the RDEIR, but will undoubtedly be considered by CDFG as possible conditions in the ITP-permitting process. As discussed in the comments on Section 6.2, an ITP will be required by CDFG. If this is a requirement, then any permit conditions and mitigation measures can and should be defined through the ITP process. L-26

To help maintain CDFG's ability to identify and implement alternative measures that are expected to be equivalent or better than the current X2 measure, we respectfully request that CSLC replace the existing mitigation with a measure requiring the ITP as a mitigation and performance measure consistent with the strikeout/underline changes below. We believe the following changes would strengthen the measures already included and thus help satisfy the requirement of CEQA to adopt feasible mitigation necessary to reduce the impacts of the project to a level of less than significant.

> **MMs for Impact BIO-8: Regular operation of sand mining activities will cause entrainment and mortality of delta and longfin smelt**

MM BIO-8a. Applicants shall secure an incidental take permit and implement operational measures to avoid or minimize the potential for entrainment and mortality of delta and longfin smelt.

• **To ensure protection of delta smelt and longfin smelt, Applicants shall secure incidental take permit (ITP) from California Department of Fish and Game (CDFG)**. The ITP shall satisfy Section 2081 of the California Fish and Game Code, which requires that Applicants ensure that the impacts of the authorized take are "minimized and fully mitigated" and that all required measures are "capable of successful implementation." Additional conditions in the ITP may include restrictions on the location, timing, duration, or other operational measures governing mining activities, and shall include measures developed in consultation with CDFG that provide protection for delta smelt and longfin smelt at all life stages. The degree and duration of mining restrictions, and the specific locations where mining should be restricted will be based on factors including species presence and relative abundance in the Project area. ~~**Timing of dredging relative to X2**. To protect delta and longfin smelt and potentially eggs and young larvae from mortality related to entrainment, sand mining activities shall be restricted upstream of the X2 location (i.e., the location of 2 parts per thousand (ppt) salinity) from December 1 through June 30 each year. This location changes during the water year in response to river flows and its location is tracked on the following website: http://cdec.water.ca.gov/cgi-progs/queryDaily?X2. The degree and duration of mining restrictions, and the specific locations where mining should be restricted during this sensitive seasonal period will be based on factors including the specific location of X2 relative to mining activities, species presence and relative abundance in the Project area based on sampling data from the nearest survey stations, and the overall status of the species (population trend). Specific seasonal restrictions will be set through consultation with the California Department of Fish and Game (CDFG) and would likely be a requirement of any Incidental Take Permit that may be issued for the Project.~~

• **Current restrictions on sand mining operations**, as specified in the National Marine Fisheries Service Biological Opinion (NMFS 2006) and the U.S. Fish and Wildlife Service Letter of Concurrence (USFWS 2006), serve to avoid and minimize take of delta smelt. Currently there are no federal restrictions on longfin smelt. Due to similar life stages, however, State delta smelt restrictions and conditions will be applied to both smelt species. These conditions include restrictions on pump priming, limiting the total mining volume, prohibiting mining in areas of shallow water depth and in proximity to shorelines, restricting mining to the designated lease areas which are away from sensitive habitat, and monitoring and reporting the location of each mining event.

MM BIO-8b. Applicants shall provide off-site mitigation to compensate for the impacts of the taking that cannot be minimized or avoided ~~may be unavoidable~~.

L-26 cont.

- **Compensatory mitigation measures** shall include restoration of delta and longfin smelt spawning and/or rearing habitat, and/or purchase of California Department of Fish and Game (CDFG)-approved mitigation credits, unless otherwise specified in ~~an~~ **the** Incidental Take Permit, in an amount based on factors including the distribution and relative abundance of the species in areas subject to mining activities and the implementation of the above-specified minimization measures, such that the amount of compensatory mitigation required is roughly proportional to the impacts of the taking on the species. Determination of the restoration area or credits required will be accomplished through consultation with CDFG and ~~is expected to~~ **shall** be specified in the Incidental Take Permit. Currently, mitigation credits for delta and longfin smelt are available through the Liberty Island Mitigation Bank.

L-26 cont.

This alternative approach would allow greater flexibility to develop and implement the most effective mitigation measures relying on performance criteria in a manner that comports with CEQA. (*CEQA Guidelines*, § 15126.4(a)(1)(B); *Endangered Habitats League v. County of Orange* (2005) 131 Cal.App.4th 777, 793-796 (upholding ten mitigation measures that included performance criteria).)

With the above mitigation, the **Rationale for Mitigation** discussion for smelt on page 4.1-52 would require substantial modification and the **Residual Impacts** discussion on pages 4.1-52 and 4.1-53 would be eliminated.

The measures proposing to restrict mining activities during peak Chinook salmon migration, and limit mining to daylight hours only from January 1 to May 31 (MM BIO-9a and MM BIO-9b) are infeasible, and are unnecessary as impacts to these species are not significant and have been addressed in the NMFS 2006 Biological Opinion and accompanying CDFG Consistency Determination. Applicants are proposing a substitute measure with performance criteria to address the potential entrainment impacts identified under BIO-9a and BIO-9b.

L-27

Mitigation Measures BIO-9a and BIO-9B, as proposed, would severely restrict mining activities for significant periods of time. Shutting down sand mining for an entire two weeks would unnecessarily impose a significant economic burden on the companies. . Further, sand mining is dependant on the tides for mining and timing of deliveries to offloading locations. The tides are in 12-hour cycles, so limiting sand mining to daylight hours would effectively prohibit sand mining except for the very few days of the year when the tides align with daylight. This measure is economically infeasible (see comments in Section VIII. – Comments on Necessity and Feasibility of Mitigation Measures Proposed in the RDEIR).

These measures are also unnecessary, as impacts to Chinook salmon and salmon smolts are less than significant, as discussed in our previous comments on Biological Resources – Impacts and Analysis. This impact was specifically addressed in the 2006 NMFS Biological and Conference Opinion for Sand Mining. That Biological Opinion found that sand mining as authorized would

not jeopardize the continued existence of any of the federally listed species—steelhead, Chinook salmon and green sturgeon. Further, the Department of Fish and Game issued a Consistency Determination Chinook salmon, finding that the federal BO was consistent with the requirements of the California Endangered Species Act in connection with potential entrainment of Chinook salmon, and found impacts of listed salmon were fully mitigated (no net loss).

Significantly, in its Biological Opinion, NMFS—the federal agency with direct jurisdiction over these species—did not find that the measures the RDEIR recommends as BIO-9a and BIO-9b (prohibition on nighttime dredging and two-week halt of sand mining in the Delta and Suisun Bay lease areas) were necessary in order to reach that conclusion, which is comparable to a finding that the project will not result in significant impacts; NMFS suggested the provision relating to nighttime dredging as a "conservation recommendation" which is discretionary but not required in order to satisfy the federal Endangered Species Act. NMFS did not recommend a two-week halt to sand mining during the Chinook salmon smolt outmigration period. There is no basis to conclude that, on the one hand, the required measures in the federal Biological Opinion are sufficient to reduce project impacts to green sturgeon and steelhead to a less than significant level, but on the other hand conclude that additional measures beyond those required by the federal BO are required in order to sufficiently reduce impacts to Chinook salmon smolts.[7]

Therefore, there is no need to impose additional conditions to mitigate a condition that has been found to be less than significant. Nonetheless, Hanson and Jerico propose to substitute the existing MMs BIO-9a and BIO-9b with the following measures to ensure protection and avoidance of Chinook salmon, steelhead trout, and green sturgeon: L-27 cont.

MMs for Impact BIO-9: Green sturgeon, Chinook salmon, and steelhead trout ~~will~~ may be impacted during sand mining

> **MM BIO-9a. Applicants shall secure incidental take permit (ITP) from CDFG for protection of Chinook salmon.** The ITP shall satisfy Section 2081 of the California Fish and Game Code, which requires that Applicants ensure that the impacts of the authorized take are "minimized and fully mitigated" and that all required measures are "capable of successful implementation." Additional conditions in the ITP may include restrictions on the location, timing, duration, or other operational measures governing mining activities, and shall include measures developed in consultation with CDFG that provide protection for Chinook salmon during migration. The degree and duration of mining restrictions, and the specific locations where mining should be restricted will be based on factors including species presence and relative abundance in the Project area.
>
> ~~**MM BIO-9a. Sand mining halted during peak Chinook salmon migration.** Sand mining in the western Delta and Suisun Bay leases shall be halted during the approximate two-week peak Chinook salmon smolt outmigration period through the Delta as monitored by USFWS at Chipps Island. Mining operations in the~~

[7] Furthermore, the Department of Fish and Game issued a Consistency Determination for this species, finding that the federal BO was consistent with the requirements of the California Endangered Species Act in connection with potential entrainment of Chinook salmon. As discussed below, CESA requires "full mitigation" of such impacts, a standard that exceeds the CEQA standard of mitigation to a less than significant level.

~~Delta and Suisun Bay lease areas will be coordinated with the fish monitoring program during the months of March to May to determine the appropriate non-work closure period.~~

MM BIO-9b. Current restrictions on sand mining operations. The conditions specified in the National Marine Fisheries Service Biological Opinion (NMFS 2006) serve to avoid and minimize take of Chinook salmon, steelhead trout, and green sturgeon. These conditions include restrictions on pump priming, limiting the total mining volume, prohibiting mining in areas of shallow water depth and in proximity to shorelines, restricting mining to the designated lease areas which are away from sensitive habitat, and monitoring and reporting the location of each mining event. Applicants shall adhere to the conditions in the NMFS Biological Opinion to protect these three species.

L-27

~~**MM BIO-9b. Sand mining limited to daylight hours from January 1 to May 31.** Sand mining in western Delta and Suisun Bay leases shall be limited to daylight hours during the period January 1 to May 31 to minimize entrainment of migrating salmon smolts through the Delta, which tend to be more surface-oriented during the daytime.~~

Rationale for Mitigation

The revised mitigation measures MMs BIO-9a and BIO-9b proposed by the applicants would reduce potentially significant impacts to less-than significant levels.

V. Comments on Air Impacts, Mitigation and Conclusions

Actual emissions and air impacts in the near term are considerably lower than those presented in the revised DEIR, taking into consideration the current level of mining activity. The mitigation measure proposed for greenhouse gases should be contingent on actual GHG emissions reaching and exceeding the baseline levels.

AIR IMPACTS -

The Revised Draft EIR (RDEIR) addresses Air Quality through evaluation of the impacts of sand mining activities on emissions of criteria pollutants, green house gases, and potential health risk from diesel particulate matter. The analyses found impacts from GHG emissions and proposed mitigation measures.

The emissions analysis presented in Section 4.5.4 of the RDEIR assumes that both Hanson and Jerico are required to upgrade their marine vessel engines according to CARB's compliance schedule, shown in Table 4.5-6, and also assumes that Hanson will install Clean Air E-Pod technology retrofits on the San Joaquin River tug and the TS&G barge by the third quarter of 2012. The emission estimates summarized in Table 4.5-7 compare the results of a number of scenarios against the revised Baseline of the annual average level of mining that occurred during the five year period between July 2002 and June 2007: Future (2012) at requested mining volumes with no new emission controls; Future (2012) with Hanson-proposed Clean Air System E-POD technology retrofit for half-year only; Future (2013) with Hanson-proposed retrofits for full year, Future (2014) with minimum required regulatory upgrades (no Hanson-proposed retrofits). All future scenarios are based on the fully proposed annual mining levels of 2,040,000 c.y. The scenarios also take into consideration the reduction in the Hanson fleet and the corresponding emissions attributed from a tug and barge. L-28

The results indicate that the proposed project - utilizing the fully proposed annual mining levels - would result in a net increase in annual emissions for all criteria pollutants. However, the results also indicate that increases in NOx emissions would be below the 15 tons per year threshold (BAAQMD 1999) in 2012 and 2013 with the installation of the Clean Air E-Pod technology retrofit – and below the threshold in 2014 with only the minimum required regulatory engine upgrades.

Hanson has been unable to arrange the acquisition and installation of the Clean Air E-Pod System technology, and will defer to the CARB compliance schedule, which requires the barge main and auxiliary diesel engines be retrofitted by Dec. 31, 2013, and the tug's main diesel engine by Dec. 31, 2017. Jerico will adhere to the CARB schedule by replacing the tug generator by Dec. 31, 2015, and the tug main engine and barge pump engine by Dec. 31, 2017. As indicated above, by adhering to the CARB compliance schedule, emissions of criteria pollutants are below the BAAQMD threshold beginning in 2014 – even at the fully proposed annual mining volumes. L-29

With regard to 2012 and 2013, even without the installation of the Hanson-proposed technology retrofits, there will be less than significant impacts and criteria pollutant emissions will be below L-30

the BAAQMD threshold by taking into consideration the current and anticipated level of mining activity within the time frame the retrofits are required. Actual mining volumes for 2012 and 2013 are anticipated to be significantly lower than the fully proposed project annual volumes, and are likely to approach the average mining volumes for 2009-2011. To demonstrate this, the applicants have prepared an analysis using the same calculation template to compare the average mining volume from 2009 through 2011 to the proposed 2002 through 2007 Baseline. The results indicate that even without the Hanson-proposed technology retrofits, NOx emissions would be 56.6 tons **below** the Baseline, well below the 15 tons per year threshold (BAAQMD 1999). With the regulatory upgrades per the CARB schedule and the current level of mining activity, the NOx emissions would be 66.6 tons below Baseline. The analysis is attached for your reference. L-30

MITIGATION -

The RDEIR concludes that there are significant impacts from GHG emissions that require mitigation, as the threshold of significance is considered to be any increase above baseline. However, as outlined previously, actual emissions under current operating levels are considerably less than baseline, and are correspondingly less compared to the mitigation criteria. Moreover, mining levels and corresponding emissions are anticipated to remain at or below baseline for several years in the near term. Therefore, the mitigation measures proposed for greenhouse gases and climate change should be contingent on actual emissions increasing over the baseline level, taking into consideration the reduction in Hanson's fleet and current level of mining activity.

Mitigation Measure for Impact AIR-2: Emissions of Greenhouse Gases -

The RDEIR concludes that there are significant impacts from GHG emissions because the Project could increase GHG emissions above baseline by 2,821 metric tons of CO_2 per year that will require mitigation. MM AIR-2 proposes that a GHG reduction plan be prepared and submitted for approval prior to startup of any new sand mining operations that demonstrates how the Project-related GHG emissions will be lowered and/or offset to Baseline levels, such that GHG emissions will not exceed 5,349 metric tons of CO_2 in any calendar year during the 10-year lease period. L-31

The applicants strongly consider that the current and anticipated level of mining activity in the near term have less than significant impacts for GHG emissions, as these current and anticipated levels are well below baseline levels. Again, to demonstrate this, the applicants prepared an analysis using the same calculation template to compare emissions from the average mining volume from 2009 through 2011 to the proposed 2002 through 2007 Baseline. The results indicate that GHG emissions are currently 3,724 metric tons CO_2 below the Baseline. With emissions under current operating levels considerably less than Baseline, MM AIR-2 should be revised to require implementation of the completed GHG reduction plan only at the point it has been verified that ACTUAL GHG emissions will exceed the baseline emissions.

VI. Comments on Other Required CEQA Sections and Environmentally Superior Alternative

COMMENTS ON 6.2 – SIGNIFICANT ENVIRONMENTAL EFFECTS OF PROPOSED PROJECT THAT CANNOT BE AVOIDED AND CANNOT BE MITIGATED TO A LESS-THAN-SIGNIFICANT LEVEL

The RDEIR's assertion that impacts of entraining delta and longfin smelt, if entrainment is occurring, cannot be mitigated to a level of insignificance is legally and factually incorrect.

The Revised DEIR inexplicably concludes that the project's potential entrainment of longfin and delta smelt cannot be mitigated to a level of insignificance. Based on this conclusion, CSLC would be required to issue a statement of overriding considerations in order to justify approval of this project. Specifically, Section 6.2 on page 6-1 indicates:

> *"Section 4.0, Environmental Analysis, presents the analysis of the potential environmental impacts associated with the proposed San Francisco Bay and Delta Sand Mining Project (Project) over the next 10 years. Effects on all potentially affected environmental resources were evaluated to determine any impacts that would remain significant after mitigation. Implementations of all mitigation measures (MMs) identified in Section 4.0, Environmental Analysis, would reduce most significant impacts to less-than-significant levels. The Project would result in a significant impact to delta smelt and longfin smelt as a result of entrainment and mortality during sand mining operations that impacts adult life stages of the delta smelt and longfin smelt, thereby exceeding the established significance thresholds."*

L-32

The RDEIR comes to this conclusion despite robust measures imposed to avoid, minimize, and mitigate the project's impacts on these smelt species, as well as the RDEIR's finding that the Applicants "will be required to obtain an Incidental Take Permit (ITP)." In order to issue an ITP, CDFG must find that the taking will be "fully mitigated", resulting in no net loss to the species or its habitat. (RDEIR page 4.1-51, lines 1-8.) The RDEIR's assertion that smelt impacts cannot be mitigated to a less-than-significant level does not comport with the evidence or the law.

1. The RDEIR applies an unnecessarily strict threshold of significance

To begin, the RDEIR applies significance thresholds not found in the mandatory or discretionary thresholds set forth in the state CEQA Guidelines. Instead, the RDEIR applies thresholds that are unnecessarily strict. Under the RDEIR, the project's impacts on a biological resource would be significant if:

- There exists a "*potential* for the Project to 'take' *any part* of the population of a special status species";
- "A *net loss occurs* in the functional habitat value of a sensitive biological habitat";

- "There is a *potential* for the movement or migration of fish to be *impeded*"; or

- If there is "*any change that could be detected* over natural variability" in the "population or habitat of any native fish or vegetation . . . ."

(RDEIR, at 4.1-37, emphasis added.) These thresholds would appear to characterize almost any "take" or "net loss" of the species as "significant," however inconsequential that loss might be.

Such low thresholds are not mandated by CEQA. Rather, CEQA and its Guidelines only address "significant" environmental effects. For example, the CEQA Guidelines mandate a finding of significance if:

- "[t]he project has the potential to . . . *substantially reduce* the habitat of a fish or wildlife species";

- "cause a fish or wildlife population to drop *below self-sustaining levels*";

- "threaten to *eliminate* a plant or animal community"; or

- "*substantially reduce* the number or restrict the range of an endangered, rare or threatened species. . . ."

L-32 cont.

(*CEQA Guidelines*, § 15065(a)(1), emphasis added.) Appendix G to the CEQA Guidelines likewise require some degree of substantiality:

- A project's impact is "significant" if it will have a "*substantial adverse effect*, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species"; or

- "*Interfere substantially* with the movement of any native resident or migratory fish or wildlife species. . . ."

(*CEQA Guidelines*, App. G.IV, emphasis added.)

Without any explanation for adopting an alternative threshold, the RDEIR abandons CEQA's accepted standards for distinguishing significant from insignificant biological impacts. While CEQA provides lead agencies with broad discretion to define particular significance thresholds, those thresholds must still be supported by evidence and should be clearly defined so as to address "significant effects" under CEQA. We therefore request that the Final EIR adopt the thresholds set forth in the CEQA Guidelines for species listed as threatened or endangered.

2. Even under the overly strict thresholds in the RDEIR, the project's impacts on longfin and delta smelt will be "fully mitigated" L-33

The RDEIR indicates that the project would exceed "established significance thresholds"[8] due to "entrainment and mortality during sand mining operations that impacts adult life stages of the delta smelt and longfin smelt." (RDEIR, at 6-1.) The RDEIR acknowledges, however, that the project applicants "will be required to obtain an Incidental Take Permit (ITP) pursuant to section 2081 of the California Fish and Game Code," which permit is only issued upon a finding by CDFG that:

- The impacts of the taking are "minimized "and "fully mitigated" through required permit measures;
- All required measures are "capable of successful implementation"; and
- Implementation of the project "would not jeopardize the continued existence of the species."

(Cal. Fish & Game Code, § 2081(b) ("CESA"); *see also* RDEIR, at 4.1-51.) Hanson and Jerico have already initiated the process of obtaining an Incidental Take Permit from CDFG, and there is no evidence to suggest that such a permit will not be issued. This process is anticipated to be complete by spring of 2012.

By ensuring that the Applicants obtain an ITP under the California Endangered Species Act, the environmental effects of entrainment will be "minimized" and "fully mitigated." Accordingly, satisfying the full mitigation standard of CESA for any entrainment impacts will satisfy CEQA's requirement to mitigate significant impacts to a less-than-significant level. Therefore, no significant environmental effects of the project would remain after the permit is issued, and there is no basis for finding that this impact is "unavoidable." L-33 cont.

While we acknowledge that CEQA and the California Fish & Game Code involve separate legal standards, we believe the "fully mitigated" standard under the Fish & Game Code is actually more protective of these species than under the legal requirements under CEQA. Under CEQA, the lead agency need only propose mitigation measures that "substantially lessen"—not entirely eliminate—the project's significant environmental impacts. (Pub. Res. Code § 21002.) The "fully mitigated" standard, on the other hand, essentially mandates that any potential "take" is either completely avoided or fully offset through measures legally enforceable by CDFG. Thus, an ITP is arguably more protective of the species and can and should be accepted as a performance measure to ensure that any mitigation effectively reduces the project's impacts to a less-than-significant level.

Further, the RDEIR's conclusions are not supported by the evidence or established case law governing acceptable mitigation for impacts to biological resources. For example, it is well settled that CSLC can rely on existing legal standards to support a less-than-significant finding. (*Tracy First v. City of Tracy* (2009) 177 Cal.App.4th 912, 933 (EIR properly relied on California

[8] The RDEIR's analysis of smelt impacts does not identify which "established thresholds" are being applied. As stated in our above comments, the thresholds set forth in the RDEIR do not comport with the mandatory or discretionary thresholds set forth in the CEQA Guidelines. And while the project may result in "take" of listed species, that take is lawfully permitted if "fully mitigated."

Building Energy Efficiency Standards to support the finding that energy impacts would remain less than significant).) Similarly, it is permissible for individual mitigation measures to rely on specific performance criteria. (*Defend the Bay v. City of Irvine* (2004) 119 Cal.App.4th 1261, 1275-1276.) In *Defend the Bay*, the court upheld species mitigation where the EIR required that, prior to approval of a tentative subdivision map, the applicant consult with CDFG and USFWS, obtain a permit, and adopt avoidance measures in coordination with those agencies. Similarly here, CSLC can and should be able to rely on the legal standards and performance criteria set forth in 2081 of the California Fish & Game Code in order to support its finding that the project's smelt impacts will be mitigated to a less-than-significant level.

Finally, we should note as well that the Entrainment Study attached as Appendix E to the RDEIR provides estimates of entrainment losses only—estimates which are simply hypothetical extrapolations from CDFG fishery survey data with a high degree of uncertainty which should be discounted as such. The study nonetheless estimates that entrainment of delta and longfin smelt is expected to be low—from "0.01%" to "less than 0.3%" of the regional abundance index for delta smelt and longfin smelt, respectively. The Entrainment Study never opines that such take levels would have any substantial adverse effect on delta smelt or longfin smelt. Certainly, the Entrainment Study never opines that such take cannot be mitigated to a level of less than significant.[9] Given the clear performance criteria that must be satisfied in order for CDFG to grant an incidental take permit—that the take is "fully mitigated"—there is no basis for the RDEIR to summarily conclude that this impact cannot be mitigated to a less-than-significant level. L-33 cont.

COMMENTS ON 6.4 – THE REDUCED PROJECT ALTERNATIVE IS NOT THE ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The Revised DEIR incorrectly concludes that the Reduced Project Alternative should be considered environmentally superior to the Proposed Project. The Reduced Project Alternative, though it would reduce the overall level of mining, would result in more significant unavoidable impacts than the Proposed Project.

The RDEIR analyzes and compares the impacts of the Proposed Project with each of the alternatives, and summarizes this comparison in Table 6-1 on pages 6-4 through 6-9. Table 6-1 indicates that the Reduced Project Alternative would result in greater impacts than the Proposed Project due to increased air emissions from transport of sand that would be needed from other sources. In fact, Table 6-1 concludes that the Reduced Project Alternative would result in three (3) additional Class I Impacts—significant adverse impacts that would remain significant even after mitigation. L-34

[9] In line with Hanson's comments on the original DEIR, the RDEIR also appears to apply the wrong baseline for measuring biological impacts. Specifically, Section 1.0 of the RDEIR states that the "ongoing disturbance" caused by sand mining in the project areas "is considered part of the baseline condition." (RDEIR, at 1-10.) Section 4.1 (Biology), on the other hand, appears to address the effects of the entire operation, and not just the marginal increase in mining expected through this new lease. (RDEIR, at 41.-49 (citing the AMS study, which looked at the potential effects of sand mining in total).) Consequently, the RDEIR conservatively and significantly overstates the biological impacts of the proposed project.

The air quality analysis showing that the Reduced Project Alternative would result in higher emissions is conservative—actual emissions are likely to be much greater than the RDEIR characterizes. This is due largely to the false assumption in the RDEIR that all "existing" aggregate sources in the Bay Area can supply construction grade sand to a market area 18 miles around the source. This is not the case. Many of the identified sources do not produce sand at all. A more realistic estimate of new vehicle miles travelled under the Reduced Project Alternative would approach 80 miles or more—double the estimate in the RDEIR analysis.

The RDEIR, however, summarily dismisses these additional Class I Impacts and finds the Reduced Project Alternative to be environmentally superior, all without any additional factual, qualitative, or quantitative analysis:

> *The Reduced Project Alternative would reduce the intensity of the Project's significant impacts, and would likely render mitigation measures easier to implement and achieve. Even though the Reduced Project Alternative may result in significant unavoidable air quality impacts associated with importing sand and obtaining sand from Bay Area quarries, the overall intensity of impacts would be less than the other alternatives. Therefore, the Reduced Project Alternative is considered the Environmentally Superior Alternative.*

L-34 cont.

(RDEIR, at 6-3.) This conclusion is not consistent with the analysis itself, which clearly shows that the Proposed Project is environmentally superior in terms of air quality impacts.

Further, the RDEIR's conclusion about whether the Reduced Project Alternative is environmentally superior to the Proposed Project appears to hinge on the assumption that the Reduced Project Alternative will reduce the "intensity of the Project's significant impacts"—i.e., significant impacts on delta and longfin smelt. As shown in our comments above, the RDEIR overstates the significance of the Proposed Project's anticipated effects on delta and longfin smelt. To the extent the Proposed Project's impacts on smelt can be "fully mitigated," the Project—unlike the Reduced Project Alternative—will have no significant and unavoidable impacts. Consequently, the Reduced Project Alternative should not be considered "environmentally superior" to the Proposed Project.

VII. COMMENTS ON MINERAL RESOURCES AND HYDROLOGY AND WATER QUALITY

Although we are generally in agreement with the conclusion of the RDEIR that no significant impacts are associated with localized changes of bathymetry associated with sand mining, the RDEIR misinterprets the total amount of sand resource available and significantly underestimates the sand resource in Central Bay.

The project proponents are generally in agreement with the conclusions of the RDEIR regarding Mineral Resources and Hydrology and Water Quality: there are no significant impacts, and that bathymetric changes due to mining are restricted to the immediate vicinity of the mining locations. L-35

Regarding sand mining in Central Bay, an important result of the incorporated study is that no impacts are found to nearby beaches or to the San Francisco Bar. On the basis of a comparison of multibeam sonar surveys in 1997 and 2008 the RDEIR concludes that the volumetric change due to bathymetric deepening (depletion) is approximately the same as the volume of sand mined during that period. On the basis of hydrodynamic modeling the RDEIR concludes that this situation may persist during the proposed project duration, with no significant impact.

However, the RDEIR misinterprets the total resource available. The RDEIR estimates the total resource as extending to a depth of 90 feet. This is only an operating depth limit based on the equipment currently in use and could easily be exceeded. The total resource is much greater than this, and was listed for individual leases in Bathymetric Survey reports through 2007. As an example, the RDEIR (Appendix G) estimated that mining in lease PRC 2036 removed "2.3% of its sediment on an annual basis". However, using the total sediment volume overlying bedrock from the 2007 Bathymetric Report, this should only be 0.45%. Central Bay sand is a very plentiful resource, and is NOT being quickly depleted by sand mining. L-36

It should be noted that the Central Bay sand resource was studied in considerable detail, including borings and particle size analysis, in a 2000 study for expansion of the San Francisco Airport (ADEC, 2000), and inclusion of this information would improve the RDEIR.

Regarding sand mining in Suisun Bay, including Middle Ground, as noted in the RDEIR the bathymetric and hydrodynamic modeling analysis is less certain because only older single beam surveys were used. It should be noted that those surveys could have considerable uncertainty. A 2008 multibeam survey for the Suisun Associates lease was not used, due the difficulty of comparison to the older single beam surveys. Nevertheless, the RDEIR reached the valid conclusion that there is no significant impact and that the proposed project would continue have only very localized bathymetric effects. L-37

Regarding Middle Ground, the RDEIR indicates somewhat inconsistently that modeling suggests significant deepening of the southern, mined part of the lease. The RDEIR does not consider single beam Bathymetric Survey reports in the 2008 – 2010 time period, which indicate the opposite trend. These reports have been sent to SLC, and should be considered in the RDEIR. L-38

Again, the total resource available is much greater than stated in the RDEIR, and is explained in the Bathymetric Survey reports. L-39

Reference

ADEC – Airfield Development Engineering Consultant. 2000. San Francisco International Airport, Airfield Development Program, Preliminary Report No. 5 (Task I), Evaluation of Potential Borrow Sites. 4 volumes.

VIII. Comments on Necessity and Feasibility of Mitigation Measures Proposed in RDEIR

Many of the mitigation measures set forth in the revised DEIR are either unnecessary, infeasible or both.

In light of the comments on the impacts analysis and the issues identified there, the necessity of mitigation measures in the RDEIR should be reexamined and certain measures should be eliminated as not necessary. The revised impacts analysis should find that many of the impacts originally identified as significant in the RDEIR are, in fact, not significant. If the impacts are not significant, it would not be proper to require associated mitigation measures.

In addition to being unnecessary to mitigate environmental effects that are not significant, many of the mitigation measures are infeasible. Under, CEQA, "feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. 14 Cal.Code Regs. §15364. CEQA imposes a duty on agencies to avoid significant environmental effects with measures that are *feasible*. (emphasis added) Id. §15021, 15041. Many of the measures proposed by the RDEIR do not satisfy the feasibility standard, and should not be included. L-40

In particular, several of the biological mitigation measures recommend imposition of severe restrictions on the times that sand mining is allowed to occur, that would result in the project being economically infeasible. For example, mitigation measure MM-BIO-8a recommends prohibiting sand mining from December 1 to June 30 downstream of the "X2" location. This location varies daily, can vary widely during this period, and can be downstream of all the mining lease areas for significant portions of this time period, effectively prohibiting ANY sand mining in the Suisun Bay area for significant portions of the year. The applicants analyzed the potential impact of this restriction, and found that for the past 5 years (the extent of the time that the data is available on the agency website), sand mining would be completely prohibited for an average of ***69 days during the 7-month period, or about 1/3 of the time.*** In the December 2010 – June 2011 period, mining would have been completely prohibited for ***174 days, or 82% of the time!*** In addition to this complete restriction, there are substantial periods that significant portions of the lease areas would be prohibited. In fact, during this 5-year timeframe, mining in the Middleground and Suisun Associates lease areas is unrestricted only an average of 15% of the time. Running a sand mining operation with these restricted time frames – and the uncertainty and unpredictability of not knowing exactly when restrictions would be in place – is simply not feasible. L-41

Similarly, the measures to restrict mining activities during peak Chinook salmon migration, and limit mining to daylight hours only from January 1 to May 31 (MM BIO-9a and MM BIO-9b) are both unnecessary and infeasible, as discussed elsewhere in our comments on Section 4.1 – Biological Resources - Mitigation. Sand mining is dependent on the tides for mining and timing of deliveries to offloading locations. The tides are on roughly 12-hour cycles, so limiting sand mining to daylight hours would effectively prohibit mining except for the few days of the year when the tide cycles align with daylight hour to allow mining and delivery on the same day. This restriction is infeasible – especially when layered over the other proposed timing restrictions. L-42

As discussed elsewhere in these comments, the applicants have initiated the process of obtaining an Incidental Take Permit from CDFG. Any appropriate operational restrictions will be developed through that process. L-43

The following table shows those measures proposed in the RDEIR which should be found to be infeasible, unnecessary to mitigate environmental effects that are not significant, or both: L-44

RDEIR MITIGATION MEASURES THAT ARE NOT NECESSARY AND/OR NOT FEASIBLE				
Potential Impact Identified in RDEIR	**Mitigation Proposed in RDEIR**	**Is Proposed Mitigation Necessary in light of comments?**	**Is Proposed Mitigation Feasible?**	
BIO-6: Sand mining could result in smothering or burial of, or mechanical damage to, infauna and epifauna, and reduced fish foraging.	**BIO-6.** Establish 100 foot buffer around hard bottom areas within and adjacent to Central Bay mining leases.	Unknown. As written, the RDEIR does not adequately describe the basis for the conclusion that there are potentially significant effects and does not identify the areas this measure might refer to. Applicants are unaware of what areas the DEIR is referring to, and need more information to adequately assess the need for this condition.	Unknown. As written, the RDEIR does not adequately describe the basis for the conclusion that there are potentially significant effects and does not identify the areas this measure might refer to. Applicants need more information to adequately assess the feasibility of this condition.	L-45
BIO-8: Regular operation of sand mining activities will cause entrainment and mortality of delta and longfin smelt.	**BIO-8a.** Applicants shall implement operational measures to minimize the potential for entrainment and mortality of delta and longfin smelt.	**Partially.** The current restrictions and operational measures specified in the NMFS 2006 Biological Opinion and USFWS Letter concurrence serve to avoid and minimize take of listed species. Other measures may be developed through consultation with CDFG and obtaining an Incidental Take Permit.	**NO.** The proposed restriction on timing of dredging relative to X2 would effectively prohibit operations by Jerico and Hanson on Middle Ground and Suisun Associates for large portions of the year when X2 is downstream of these areas. This would render the project infeasible**.** **See discussion in comments on Necessity and Feasibility of Mitigation Measures.**	L-46
	BIO-8b. Applicants shall provide off-site mitigation to compensate for impacts of the taking that may be unavoidable.	**No.** Any requirement to fund habitat restoration or mitigation credits should be imposed during the incidental take permit process in relation to actual impacts of entrainment if found. Jerico and Hanson are consulting with CDFG.	**Unknown.** Jerico and Hanson are consulting with CDFG, and feasibility of off-site mitigation will be determined though that process.	L-47

BIO-9: Green sturgeon, Chinook salmon, and steelhead trout will be impacted during sand mining.	**BIO-9a.** Sand mining halted during peak Chinook salmon migration. .	**NO. R**DEIR improperly concludes that measures beyond those required by NMFS Biological Opinion and DFG Consistency Determination are needed. NMFS did NOT recommend halt of sand mining during Chinook salmon migration. (See Biological Impacts Comments)	**NO.** Halting sand mining for two weeks would necessitate layoff of employees and cause significant economic impacts—particularly when demand for sand mining increases to expected economic levels that are reflected in the project proposal. The impact of this measure is amplified if layered with other proposed mitigation that further restrict sand mining times.	L-48
	BIO-9b. Sand mining limited to daylight hours from January 1 to May 31	**NO.** RDEIR improperly concludes that measures beyond those required by NMFS Biological Opinion and DFG Consistency Determination are needed. Further, as explained in comments, there is no statistically valid basis for assertion that nighttime dredging causes greater impacts. NMFS did not require this measure as necessary to minimize impacts. (See Biological Impacts Comments)	**NO.** Sand mining and delivery of sand to offloading facilities are highly dependant on tides, which are based on roughly 12 hour cycles, with only one tide being high enough to deliver to some offload locations. Limiting sand mining to daytime hours only would place a huge economic burden on sand mining during this time of year, as it would be virtually impossible to mine during daylight hours and deliver on the high tide on the same day.	L-49
AIR-2: Potential impacts on climate change.	**AIR-2.** Prepare and implement a Greenhouse Gas (GHG) Reduction Plan.	**NO**. As written, the RDEIR requires preparation and submission of GHG Reduction Plan within three moths of issuance of leases – regardless of the level of actual emissions. As discussed in the Comments on Air Impacts and Mitigation, mining levels and corresponding emissions are anticipated to remain at or below baseline for several years in the near term. Therefore, the	Unknown.	L-50

		mitigation measures proposed for greenhouse gases and climate change should be contingent on actual emissions increasing over the baseline level, and only implemented at that time.		L-50 cont.
LU-4: Conflicts with regional or local land use plans and policies	**LU-4.** Implement MM BIO-6, BIO-8a, BIO-8b, BIO-9a, BIO-9b, HAZ-1, CUL-1, and CUL-3.	**NO, not all.** For the reasons discussed above, measures MM BIO-8a, BIO-8b, BIO-9a, and BIO-9b, are not necessary to reduce a significant environmental impact and, therefore, are not necessary to avoid conflicts with regional or local land use plans and policies.	**NO, not all.** For the reasons discussed above, measures MM BIO-8a, BIO-8b, BIO-9a, and BIO-9b, are not feasible or it is unknown if they are feasible.	L-51

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Comments Revised Draft Environmental Impact Report – San Francisco Bay and Delta Sand Mining

Appendix 1

Comparison of Average Mining Volumes from 2009 – 2011 to Proposed 2002 – 2007 Baseline

L-52

Table D1. Emissions Summary Baseline 2002-2007 vs Actual Avg 2009-2011

Scenario	Annual Emissions (tons per year)					Metric Tons
	NOx	PM	ROG	CO	CO2	CO2
Existing (Table D5-Baseline)						
Hanson (TS&G)	42.7	1.5	3.7	11.7	2,656.2	
Hanson (DS-10)	32.6	1.3	3.3	10.4	2,525.7	
Suisin Assoc. (TS&G)	1.8	0.1	0.2	0.5	110.3	
Suisun Assoc. (DS-10)	0.7	0.0	0.1	0.2	51.2	
Suisun Assoc. (Jerico)	0.4	0.0	0.1	0.2	38.5	
Jerico	1.9	0.1	0.3	0.9	183.5	
CEMEX	4.8	0.2	0.4	1.4	330.8	
TOTAL	*84.8*	*3.1*	*7.9*	*25.3*	*5896.3*	*5,349*
Actual (Table D8 - Avg 2009-2011)						
Hanson (TS&G)	25.4	0.9	2.2	7.0	1,583.7	
Hanson (DS-10)	0.0	0.0	0.0	0.0	-	
Suisin Assoc. (TS&G)	1.8	0.1	0.2	0.5	110.3	
Suisun Assoc. (DS-10)	0.0	0.0	0.0	0.0	-	
Suisun Assoc. (Jerico)	0.2	0.0	0.0	0.1	20.2	
Jerico	0.8	0.0	0.1	0.4	77.1	
TOTAL	*28.2*	*1.0*	*2.5*	*8.0*	*1,791.2*	*1,625*
Change from Baseline	***(56.6)***	*(2.2)*	*(5.4)*	*(17.4)*	*(4,105.0)*	*(3,724)*
Future (2014) NOx Emissions w/ATCM						
Hanson (TS&G)	16.0	--	--	--	--	
Hanson (DS-10)	0.0	--	--	--	--	
Suisin Assoc. (TS&G)	1.1	--	--	--	--	
Suisun Assoc. (DS-10)	0.0	--	--	--	--	
Suisun Assoc. (Jerico)	0.2	--	--	--	--	
Jerico	0.8	--	--	--	--	
TOTAL	*18.2*	--	--	--	--	
Change from Baseline	***(66.6)***	--	--	--	--	-
Hanson (TS&G)	0.0	--	--	--	--	
Hanson (DS-10)	0.0	--	--	--	--	
Suisin Assoc. (TS&G)	0.0	--	--	--	--	
Suisun Assoc. (DS-10)	0.0	--	--	--	--	
Suisun Assoc. (Jerico)	0.0	--	--	--	--	
Jerico	0.0	--	--	--	--	
TOTAL	*0.0*	--	--	--	--	
Change from Baseline		--	--	--	--	-

L-52 cont.

Emissions_REV_BASELINE_2002-07 vs Actual 2009-11 12_10_11.xls

Table D2. Mining Events (Baseline vs Actual Average Mined)

Parcel	Average Mined per Year 2002-2007[b]		Average Mined Years 2009-2011	
	Annual Volume[c]	Mining Events [a]	Annual Volume	Mining Events [a]
State Lands Commission Parcels				
PRC 709.1 Presidio Shoals (Hanson)	290,331	145	135,457	68
PRC 2036.1 Point Knox South (Hanson)	252,637	126	27,600	14
PRC 7779.1 Point Knox Shoal (Hanson)	390,440	195	151,197	76
PRC 7780.1 Alcatraz South Shoal (Hanson)	127,248	64	0	0
PRC 7781.1: Suisun Associates	85,746	43	43,510	22
PRC 5871.1 Alcatraz Shoal (CEMEX)	80,383	40		
State Lands Lease Totals	*1,226,785*	*613*	*357,764*	*180*
Private Parcels				
Grossi Middle Ground: ACOE Permit No. 25653N (Hanson)	0	0	0	0
Grossi Middle Ground: ACOE Permit No. 24996N (Hanson)	0	0	0	0
Grossi Middle Ground: ACOE Permit No. 24913N (Jerico)	0	0	84,515	42
CEMEX	199,866	100		
Private Parcel Lease Totals	*199,866*	*100*	*84,515*	*42*
Total All Leases	**1,426,651**	**713**	**442,279**	**222**
Net Change in Mining Events	**-491**			

[a] Assumes that 2,000 cubic yards of sand are collected during each mining event

[b] SLC proposed baseline period July 1, 2002 to June 30, 2007

[c] SLC proposed baseline volume from assessment table from Jan. 24, 2011 meeting.

Emissions_REV_BASELINE_2002-07 vs Actual 2009-11 12_10_11.xls

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Table D3. Emission Factors for Mining Equipment (Baseline)

Equipment Name	Type	Manufacture Year [a]	Horsepower [a]	Load Factor [b]	Emission Factor (g/bhp-hr) [c,d]					Emission Rate (lb/hr)				
					NOx	PM	ROG	CO	CO2	NOx	PM	ROG	CO	CO2
Hanson American River	Tug (2 engines)	2003	1,710	0.5	6.93	0.29	0.68	1.97	568.3	13.1	0.5	1.3	3.7	1,071.2
Hanson San Joaquin River	Tug (2 engines)	2001	2,600	0.5	6.93	0.29	0.68	1.97	568.3	19.9	0.8	1.9	5.6	1,628.8
	Barge - Main Engine	1983	1,000	0.52	13.17	0.36	0.95	3.07	568.3	15.1	0.4	1.1	3.5	651.5
	Barge - Generator (Aux)	1984	265	0.43	10.23	0.32	1.07	4.33	568.3	2.6	0.1	0.3	1.1	142.8
Hanson TS & G	Barge - Thruster (Aux)	1984	304	0.43	10.23	0.32	1.07	4.33	568.3	2.9	0.1	0.3	1.2	163.8
	Barge - Main Engine	2001	1,100	0.52	6.93	0.29	0.68	1.97	568.3	8.7	0.4	0.9	2.5	716.7
	Barge - Monitor Pump (Aux)	2002	440	0.43	6.93	0.26	0.81	2.78	568.3	2.9	0.1	0.3	1.2	237.0
	Barge - Flood Pump (Aux)	2002	440	0.43	6.93	0.26	0.81	2.78	568.3	2.9	0.1	0.3	1.2	237.0
Hanson DS-10	Barge - Generator (Aux)	1984	375	0.43	10.23	0.32	1.07	4.33	568.3	3.6	0.1	0.4	1.5	202.0
	Tug (2 engines)	2001	1,060	0.5	6.93	0.29	0.68	1.97	568.3	8.1	0.3	0.8	2.3	664.0
Jerico Tug	Tug (generator)	2000	64	0.31	6.93	0.46	1.18	3.59	568.3	0.3	0.0	0.1	0.2	24.9
	Barge Generator (Aux)	2004	99	0.43	4.62	0.46	1.18	3.59	568.3	0.4	0.0	0.1	0.3	53.3
Jerico Barge	Barge Pump (Aux)	2001	230	0.43	6.93	0.26	0.81	2.78	568.3	1.5	0.1	0.2	0.6	123.9
Jerico Loader	Loader	2007	195	0.43	4.83	0.12	0.81	3.73	568.3	0.9	0.0	0.1	0.7	105.1
CEMEX Tug[e]	Tug (2 engines)	2001	2,600	0.5	6.93	0.29	0.68	1.97	568.3	19.9	0.8	1.9	5.6	1,628.8
CEMEX Barge[e]	Barge - Main Engine	1983	1,000	0.52	13.17	0.36	0.95	3.07	568.3	15.1	0.4	1.1	3.5	651.5
	Barge - Generator (Aux)	1984	265	0.43	10.23	0.32	1.07	4.33	568.3	2.6	0.1	0.3	1.1	142.8

[a] Provided by Project Applicants.

[b] Based on information provided in Appendix B - Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, from CARB's *Technical Support Document: Initial Statement of Reason for Proposed Rule Making, Proposed Regulation for Commercial Harbor Craft,* September 2007.

[c] Criteria pollutant emission factors obtained from Appendix B (cited above). All Equipment except for the TS&G assumes a fuel correction factor of 0.948 and 0.8 for NOx and PM respectively while the TS&G assumes a fuel correction factor of 0.930 and 0.720 for NOx and PM10 respectively.

[d] CO2 emission factors derived from OFFROAD2007. Represents CO2 emission factors for diesel fueled engines.

[e] CEMEX Tug and barge specs are estimated based on comparable equipment operated by Hanson.

Emissions_REV_BASELINE_2002-07 vs Actual 2009-11 12_10_11.xls

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Table D4. Emission Rates by Activity (Baseline)

Equipment - Activity	Emission Rate (lb/hr-equipment)				
	NOx	PM	ROG	CO	CO2
Hanson TS&G 230 - Mining					
San Joaquin Tug	19.9	0.8	1.9	5.6	1,628.8
TS&G - Barge - Main	15.1	0.4	1.1	3.5	651.5
TS&G - Barge - Gen - Aux	2.6	0.1	0.3	1.1	142.8
Total	***37.5***	***1.3***	***3.3***	***10.3***	***2,423.0***
Hanson TS&G 230 - Cruising					
San Joaquin Tug	19.9	0.8	1.9	5.6	1,628.8
TS&G - Barge - Gen - Aux	2.6	0.1	0.3	1.1	142.8
Total	***22.4***	***0.9***	***2.2***	***6.7***	***1,771.5***
Hanson TS&G 230 - Unloading					
TS&G - Barge - Main	15.1	0.4	1.1	3.5	651.5
TS&G - Barge - Gen - Aux	2.6	0.1	0.3	1.1	142.8
Total	***17.7***	***0.5***	***1.4***	***4.6***	***794.3***
Hanson DS-10 - Mining					
American River Tug	13.1	0.5	1.3	3.7	1,071.2
DS-10 - Barge (Main)	8.7	0.4	0.9	2.5	716.7
DS-10 - Barge (Generator)	3.6	0.1	0.4	1.5	202.0
Total	***25.4***	***1.0***	***2.5***	***7.7***	***1,989.9***
Hanson DS-10 - Cruising					
American River Tug	13.1	0.5	1.3	3.7	1,071.2
DS-10 - Barge (Generator)	3.6	0.1	0.4	1.5	202.0
Total	***16.7***	***0.7***	***1.7***	***5.3***	***1,273.3***
Hanson DS-10 - Unloading					
Barge - Main	8.7	0.4	0.9	2.5	716.7
Barge - Monitor Pump - Aux	2.9	0.1	0.3	1.2	237.0
Barge - Flood Pump- Aux	2.9	0.1	0.3	1.2	237.0
Barge - Gen - Aux	3.6	0.1	0.4	1.5	202.0
Total	***18.2***	***0.7***	***1.9***	***6.3***	***1,392.8***
Jerico Barge - Mining					
Jerico Barge - Generator	0.4	0.0	0.1	0.3	53.3
Jerico Barge - Monitor	1.5	0.1	0.2	0.6	123.9
Total	***1.9***	***0.1***	***0.3***	***0.9***	***177.2***
Jerico Barge - Cruising					
Jerico Tug - Main	8.1	0.3	0.8	2.3	664.0
Jerico Barge - Generator	0.4	0.0	0.1	0.3	53.3
Total	***8.5***	***0.4***	***0.9***	***2.6***	***717.4***
Jerico Unloading					
Loader	0.9	0.0	0.1	0.7	105.1
Total	***0.9***	***0.0***	***0.1***	***0.7***	***105.1***
CEMEX - Mining					
Tug	19.9	0.8	1.9	5.6	1628.8
Barge - Main	15.1	0.4	1.1	3.5	651.5
Barge - Gen - Aux	2.6	0.1	0.3	1.1	142.8
Total	**37.5**	**1.3**	**3.3**	**10.3**	**2423.0**
CEMEX - Cruising					
Tug	19.9	0.8	1.9	5.6	1628.8
Barge - Gen - Aux	2.6	0.1	0.3	1.1	142.8
Total	**22.4**	**0.9**	**2.2**	**6.7**	**1771.5**
CEMEX - Unloading					
TS&G - Barge - Main	15.1	0.4	1.1	3.5	651.5
TS&G - Barge - Gen - Aux	2.6	0.1	0.3	1.1	142.8
Total	**17.7**	**0.5**	**1.4**	**4.6**	**794.3**

Emissions_REV_BASELINE_2002-07 vs Actual 2009-11 12_10_11.xls

L-52 cont.

Table D5. Annual Emissions (Baseline)

Barge	Mining Events	Activity	Hours	Emission Rates (lb/hr)					Annual Emissions (tons per year)				
				NOx	PM	ROG	CO	CO2	NOx	PM	ROG	CO	CO2
Hanson (TS&G 230)	265	Cruising	2	22.4	0.9	2.2	6.7	1,771.5	5.9	0.2	0.6	1.8	469.5
		Mining	5.5	37.5	1.3	3.3	10.3	2,423.0	27.3	1.0	2.4	7.5	1,765.8
		Unloading	4	17.7	0.5	1.4	4.6	794.3	9.4	0.3	0.7	2.4	421.0
									42.7	***1.5***	***3.7***	***11.7***	***2656.2***
Hanson (DS-10)	265	Cruising	2	16.7	0.7	1.7	5.3	1,273.3	4.4	0.2	0.4	1.4	337.4
		Mining	5.5	25.4	1.0	2.5	7.7	1,989.9	18.5	0.7	1.8	5.6	1,450.1
		Unloading	4	18.2	0.7	1.9	6.3	1,392.8	9.6	0.4	1.0	3.4	738.2
									32.6	***1.3***	***3.3***	***10.4***	***2525.7***
Suisun Associates (TS&G 230)	11	Cruising	2	22.4	0.9	2.2	6.7	1,771.5	0.2	0.0	0.0	0.1	19.5
		Mining	5.5	37.5	1.3	3.3	10.3	2,423.0	1.1	0.0	0.1	0.3	73.3
		Unloading	4	17.7	0.5	1.4	4.6	794.3	0.4	0.0	0.0	0.1	17.5
									1.8	***0.1***	***0.2***	***0.5***	***110.3***
Suisun Associates (DS-10)	11	Cruising	2	16.7	0.7	1.7	5.3	1,273.3	0.2	0.0	0.0	0.1	14.0
		Cruising	2	25.4	1.0	2.5	7.7	1,989.9	0.3	0.0	0.0	0.1	21.9
		Cruising	2	18.2	0.7	1.9	6.3	1,392.8	0.2	0.0	0.0	0.1	15.3
									0.7	***0.0***	***0.1***	***0.2***	***51.2***
Suisun Associates (Jerico Barge)	21	Cruising	2	8.5	0.4	0.9	2.6	717.4	0.2	0.0	0.0	0.1	15.1
		Mining	5.5	1.9	0.1	0.3	0.9	177.2	0.1	0.0	0.0	0.1	10.2
		Unloading	12	0.9	0.0	0.1	0.7	105.1	0.1	0.0	0.0	0.1	13.2
									0.4	***0.0***	***0.1***	***0.2***	***38.5***
Jerico	100	Cruising	2	8.5	0.4	0.9	2.6	717.4	0.9	0.0	0.1	0.3	71.7
		Mining	5.5	1.9	0.1	0.3	0.9	177.2	0.5	0.0	0.1	0.3	48.7
		Unloading	12	0.9	0.0	0.1	0.7	105.1	0.5	0.0	0.1	0.4	63.0
									1.9	***0.1***	***0.3***	***0.9***	***183.5***
	673	**Total Emisisons Excluding CEMEX (tons per year)**							**80.0**	**2.9**	**7.5**	**23.9**	**5565.5**
CEMEX	40	Cruising											
		Mining											
		Unloading							4.8	0.2	0.4	1.4	330.8
	713	**Total Emisisons Including CEMEX (tons per year)**							**84.8**	**3.1**	**7.9**	**25.3**	**5896.3**

Emissions_REV_BASELINE_2002-07 vs Actual 2009-11 12_10_11.xls

L-52 cont.

Table D6. Emission Factors for Mining Equipment Avg 2009-2011

Equipment Name	Type	Manufacture Year [a]	Horsepower [a]	Load Factor [b]	Emission Factor (g/bhp-hr) [c,d]					Emission Rate (lb/hr)				
					NOx	PM	ROG	CO	CO2	NOx	PM	ROG	CO	CO2
Hanson American River	Tug (2 engines)	2003	1,710	0.5	6.93	0.29	0.68	1.97	568.3	13.1	0.5	1.3	3.7	1,071.2
Hanson San Joaquin River	Tug (2 engines)	2001	2,600	0.5	6.93	0.29	0.68	1.97	568.3	19.9	0.8	1.9	5.6	1,628.8
Hanson TS & G	Barge - Main Engine	1983	1,000	0.52	13.17	0.36	0.95	3.07	568.3	15.1	0.4	1.1	3.5	651.5
	Barge - Generator (Aux)	1984	265	0.43	10.23	0.32	1.07	4.33	568.3	2.6	0.1	0.3	1.1	142.8
	Barge - Thruster (Aux)	1984	304	0.43	10.23	0.32	1.07	4.33	568.3	2.9	0.1	0.3	1.2	163.8
Hanson DS-10	Barge - Main Engine	2001	1,100	0.52	6.93	0.29	0.68	1.97	568.3	8.7	0.4	0.9	2.5	716.7
	Barge - Monitor Pump (Aux)	2002	440	0.43	6.93	0.26	0.81	2.78	568.3	2.9	0.1	0.3	1.2	237.0
	Barge - Flood Pump (Aux)	2002	440	0.43	6.93	0.26	0.81	2.78	568.3	2.9	0.1	0.3	1.2	237.0
	Barge - Generator (Aux)	1984	375	0.43	10.23	0.32	1.07	4.33	568.3	3.6	0.1	0.4	1.5	202.0
Jerico Tug	Tug (2 engines)	2001	1,060	0.5	6.93	0.29	0.68	1.97	568.3	8.1	0.3	0.8	2.3	664.0
	Tug (generator)	2000	64	0.31	6.93	0.46	1.18	3.59	568.3	0.3	0.0	0.1	0.2	24.9
Jerico Barge	Barge Generator (Aux)	2004	99	0.43	4.62	0.46	1.18	3.59	568.3	0.4	0.0	0.1	0.3	53.3
	Barge Pump (Aux)	2001	230	0.43	6.93	0.26	0.81	2.78	568.3	1.5	0.1	0.2	0.6	123.9
Jerico Loader	Loader	2007	195	0.43	4.83	0.12	0.81	3.73	568.3	0.9	0.0	0.1	0.7	105.1

[a] Provided by Project Applicants.

[b] Based on information provided in Appendix B - Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, from CARB's *Technical Support Document: Initial Statement of Reason for Proposed Rule Making, Proposed Regulation for Commercial Harbor Craft*, September 2007.

[c] Assumes all Jerico engines would meet USEPA Tier 2 NOx standard of 7.8 grams per kilowatt-hour (5.8 grams per brake-horsepower hour) by 2010.

[d] CO2 emission factors derived from OFFROAD2007. Represents CO2 emission factors for diesel fueled engines.

Emissions_REV_BASELINE_2002-07 vs Actual 2009-11 12_10_11.xls

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Table D7. Emission Rates by Activity (Avg 2009-2011)

Equipment - Activity	Emission Rate (lb/hr-equipment)				
	NOx	PM	ROG	CO	CO2
Hanson TS&G 230 - Mining					
San Joaquin Tug	19.9	0.8	1.9	5.6	1,628.8
TS&G - Barge - Main	15.1	0.4	1.1	3.5	651.5
TS&G - Barge - Gen - Aux	2.6	0.1	0.3	1.1	142.8
Total	***37.5***	***1.3***	***3.3***	***10.3***	***2,423.0***
Hanson TS&G 230 - Cruising					
San Joaquin Tug	19.9	0.8	1.9	5.6	1,628.8
TS&G - Barge - Gen - Aux	2.6	0.1	0.3	1.1	142.8
Total	***22.4***	***0.9***	***2.2***	***6.7***	***1,771.5***
Hanson TS&G 230 - Unloading					
TS&G - Barge - Main	15.1	0.4	1.1	3.5	651.5
TS&G - Barge - Gen - Aux	2.6	0.1	0.3	1.1	142.8
Total	***17.7***	***0.5***	***1.4***	***4.6***	***794.3***
Hanson DS-10 - Mining					
American River Tug	13.1	0.5	1.3	3.7	1,071.2
DS-10 - Barge (Main)	8.7	0.4	0.9	2.5	716.7
DS-10 - Barge (Generator)	3.6	0.1	0.4	1.5	202.0
Total	***25.4***	***1.0***	***2.5***	***7.7***	***1,989.9***
Hanson DS-10 - Cruising					
American River Tug	13.1	0.5	1.3	3.7	1,071.2
DS-10 - Barge (Generator)	3.6	0.1	0.4	1.5	202.0
Total	***16.7***	***0.7***	***1.7***	***5.3***	***1,273.3***
Hanson DS-10 - Unloading					
Barge - Main	8.7	0.4	0.9	2.5	716.7
Barge - Monitor Pump - Aux	2.9	0.1	0.3	1.2	237.0
Barge - Flood Pump- Aux	2.9	0.1	0.3	1.2	237.0
Barge - Gen - Aux	3.6	0.1	0.4	1.5	202.0
Total	***18.2***	***0.7***	***1.9***	***6.3***	***1,392.8***
Jerico Barge - Mining					
Jerico Barge - Generator	0.4	0.0	0.1	0.3	53.3
Jerico Barge - Monitor	1.5	0.1	0.2	0.6	123.9
Total	***1.9***	***0.1***	***0.3***	***0.9***	***177.2***
Jerico Barge - Cruising					
Jerico Tug - Main	8.1	0.3	0.8	2.3	664.0
Jerico Barge - Generator	0.4	0.0	0.1	0.3	53.3
Total	***8.5***	***0.4***	***0.9***	***2.6***	***717.4***
Jerico Unloading					
Loader	0.9	0.0	0.1	0.7	105.1
Total	***0.9***	***0.0***	***0.1***	***0.7***	***105.1***

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Emissions_REV_BASELINE_2002-07 vs Actual 2009-11 12_10_11.xls

Table D8. Annual Emissions (Avg 2009-2011)

Barge	Mining Events	Activity	Hours	Emission Rates (lb/hr)					Annual Emissions (tons per year)				
				NOx	PM	ROG	CO	CO2	NOx	PM	ROG	CO	CO2
Hanson (TS&G 230)	158	Cruising	2	22.4	0.9	2.2	6.7	1,771.5	3.5	0.1	0.4	1.1	279.9
		Mining	5.5	37.5	1.3	3.3	10.3	2,423.0	16.3	0.6	1.4	4.5	1,052.8
		Unloading	4	17.7	0.5	1.4	4.6	794.3	5.6	0.2	0.4	1.5	251.0
									25.4	***0.9***	***2.2***	***7.0***	***1583.7***
Hanson (DS-10)	0	Cruising	2	16.7	0.7	1.7	5.3	1,273.3	0.0	0.0	0.0	0.0	-
		Mining	5.5	25.4	1.0	2.5	7.7	1,989.9	0.0	0.0	0.0	0.0	-
		Unloading	4	18.2	0.7	1.9	6.3	1,392.8	0.0	0.0	0.0	0.0	-
									0.0	***0.0***	***0.0***	***0.0***	***0.0***
Suisun Associates (TS&G 230)	11	Cruising	2	22.4	0.9	2.2	6.7	1,771.5	0.2	0.0	0.0	0.1	19.5
		Mining	5.5	37.5	1.3	3.3	10.3	2,423.0	1.1	0.0	0.1	0.3	73.3
		Unloading	4	17.7	0.5	1.4	4.6	794.3	0.4	0.0	0.0	0.1	17.5
									1.8	***0.1***	***0.2***	***0.5***	***110.3***
Suisun Associates (DS-10)	0	Cruising	2	16.7	0.7	1.7	5.3	1,273.3	0.0	0.0	0.0	0.0	0.0
		Cruising	2	25.4	1.0	2.5	7.7	1,989.9	0.0	0.0	0.0	0.0	0.0
		Cruising	2	18.2	0.7	1.9	6.3	1,392.8	0.0	0.0	0.0	0.0	0.0
									0.0	***0.0***	***0.0***	***0.0***	***0.0***
Suisun Associates (Jerico Barge)	11	Cruising	2	8.5	0.4	0.9	2.6	717.4	0.1	0.0	0.0	0.0	7.9
		Mining	5.5	1.9	0.1	0.3	0.9	177.2	0.1	0.0	0.0	0.0	5.4
		Unloading	12	0.9	0.0	0.1	0.7	105.1	0.1	0.0	0.0	0.0	6.9
									0.2	***0.0***	***0.0***	***0.1***	***20.2***
Jerico	42	Cruising	2	8.5	0.4	0.9	2.6	717.4	0.4	0.0	0.0	0.1	30.1
		Mining	5.5	1.9	0.1	0.3	0.9	177.2	0.2	0.0	0.0	0.1	20.5
		Unloading	12	0.9	0.0	0.1	0.7	105.1	0.2	0.0	0.0	0.2	26.5
									0.8	***0.0***	***0.1***	***0.4***	***77.1***
Total Emisisons (tons per year)									**28.2**	**1.0**	**2.5**	**8.0**	**1791.2**

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Emissions_REV_BASELINE_2002-07 vs Actual 2009-11 12_10_11.xls

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cont.

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Table D9. Emission Factors for Mining Equipment (2014) with Required Airborne Toxic Control Measures.

Equipment Name	Type	Manufacture Year [a]	Horsepower [a]	Load Factor [b]	Emission Factor (g/bhp-hr) [c,d]					Emission Rate (lb/hr)				
					NOx	PM	ROG	CO	CO2	NOx	PM	ROG	CO	CO2
Hanson American River	Tug (2 engines)	2003	1,710	0.5	6.93	0.29	0.68	1.97	568.3	13.1	0.5	1.3	3.7	1,071.2
Hanson San Joaquin River	Tug (2 engines)	2001	2,600	0.5	6.93	0.29	0.68	1.97	568.3	19.9	0.8	1.9	5.6	1,628.8
Hanson TS & G	Barge - Main Engine	1983	1,000	0.52	3.92	0.36	0.95	3.07	568.3	4.5	0.4	1.1	3.5	651.5
	Barge - Generator (Aux)	1984	265	0.43	3.79	0.32	1.07	4.33	568.3	1.0	0.1	0.3	1.1	142.8
	Barge - Thruster (Aux)	1984	304	0.43	3.79	0.32	1.07	4.33	568.3	1.1	0.1	0.3	1.2	163.8
Hanson DS-10	Barge - Main Engine	2001	1,100	0.52	6.93	0.29	0.68	1.97	568.3	8.7	0.4	0.9	2.5	716.7
	Barge - Monitor Pump (Aux)	2002	440	0.43	6.93	0.26	0.81	2.78	568.3	2.9	0.1	0.3	1.2	237.0
	Barge - Flood Pump (Aux)	2002	440	0.43	6.93	0.26	0.81	2.78	568.3	2.9	0.1	0.3	1.2	237.0
	Barge - Generator (Aux)	1984	375	0.43	4.73	0.32	1.07	4.33	568.3	1.7	0.1	0.4	1.5	202.0
Jerico Tug	Tug (2 engines)	2001	1,060	0.5	6.93	0.29	0.68	1.97	568.3	8.1	0.3	0.8	2.3	664.0
	Tug (generator)	2000	64	0.31	6.93	0.46	1.18	3.59	568.3	0.3	0.0	0.1	0.2	24.9
Jerico Barge	Barge Generator (Aux)	2004	99	0.43	4.62	0.46	1.18	3.59	568.3	0.4	0.0	0.1	0.3	53.3
	Barge Pump (Aux)	2001	230	0.43	6.93	0.26	0.81	2.78	568.3	1.5	0.1	0.2	0.6	123.9
Jerico Loader	Loader	2007	195	0.43	4.83	0.12	0.81	3.73	568.3	0.9	0.0	0.1	0.7	105.1

[a] Provided by Project Applicants.

[b] Based on information provided in Appendix B - Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, from CARB's *Technical Support Document: Initial Statement of Reason for Proposed Rule Making, Proposed Regulation for Commercial Harbor Craft*, September 2007.

[c] Assumes all Hanson engines manufactured in or prior to 1985 would meet USEPA Tier 2 NOx standard of 7.8 grams per kilowatt-hour (5.8 grams per brake-horsepower hour) by 2013 and that all Jerico engines met the USEPA Tier 2 NOx standard of 7.8 grams per kilowatt-hour (5.8 grams per brake-horsepower hour) by 2010.

[d] CO2 emission factors derived from OFFROAD2007. Represents CO2 emission factors for diesel fueled engines.

Emissions_REV_BASELINE_2002-07 vs Actual 2009-11 12_10_11.xls

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Table D10. Emission Rates by Activity (2014) w/ATCM

Equipment - Activity	Emission Rate (lb/hr-equipment)				
	NOx	PM	ROG	CO	CO2
Hanson TS&G 230 - Mining					
San Joaquin Tug	19.9	0.8	1.9	5.6	1,628.8
TS&G - Barge - Main	4.5	0.4	1.1	3.5	651.5
TS&G - Barge - Gen - Aux	1.0	0.1	0.3	1.1	142.8
Total	***25.3***	***1.3***	***3.3***	***10.3***	***2,423.0***
Hanson TS&G 230 - Cruising					
San Joaquin Tug	19.9	0.8	1.9	5.6	1,628.8
TS&G - Barge - Gen - Aux	1.0	0.1	0.3	1.1	142.8
Total	***20.8***	***0.9***	***2.2***	***6.7***	***1,771.5***
Hanson TS&G 230 - Unloading					
TS&G - Barge - Main	4.5	0.4	1.1	3.5	651.5
TS&G - Barge - Gen - Aux	1.0	0.1	0.3	1.1	142.8
Total	***5.4***	***0.5***	***1.4***	***4.6***	***794.3***
Hanson DS-10 - Mining					
American River Tug	13.1	0.5	1.3	3.7	1,071.2
DS-10 - Barge (Main)	8.7	0.4	0.9	2.5	716.7
DS-10 - Barge (Generator)	1.7	0.1	0.4	1.5	202.0
Total	***23.5***	***1.0***	***2.5***	***7.7***	***1,989.9***
Hanson DS-10 - Cruising					
American River Tug	13.1	0.5	1.3	3.7	1,071.2
DS-10 - Barge (Generator)	1.7	0.1	0.4	1.5	202.0
Total	***14.7***	***0.7***	***1.7***	***5.3***	***1,273.3***
Hanson DS-10 - Unloading					
Barge - Main	8.7	0.4	0.9	2.5	716.7
Barge - Monitor Pump - Aux	2.9	0.1	0.3	1.2	237.0
Barge - Flood Pump- Aux	2.9	0.1	0.3	1.2	237.0
Barge - Gen - Aux	1.7	0.1	0.4	1.5	202.0
Total	***16.2***	***0.7***	***1.9***	***6.3***	***1,392.8***
Jerico Barge - Mining					
Jerico Barge - Generator	0.4	0.0	0.1	0.3	53.3
Jerico Barge - Monitor	1.5	0.1	0.2	0.6	123.9
Total	***1.9***	***0.1***	***0.3***	***0.9***	***177.2***
Jerico Barge - Cruising					
Jerico Tug - Main	8.1	0.3	0.8	2.3	664.0
Jerico Barge - Generator	0.4	0.0	0.1	0.3	53.3
Total	***8.5***	***0.4***	***0.9***	***2.6***	***717.4***
Jerico Unloading					
Loader	0.9	0.0	0.1	0.7	105.1
Total	***0.9***	***0.0***	***0.1***	***0.7***	***105.1***

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Emissions_REV_BASELINE_2002-07 vs Actual 2009-11 12_10_11.xls

Table D11. Annual Emissions (2014) with Required Airborne Toxic Control Measures.

Barge	Mining Events	Activity	Hours	Emission Rates (lb/hr)					Annual Emissions (tons per year)				
				NOx	PM	ROG	CO	CO2	NOx	PM	ROG	CO	CO2
Hanson (TS&G 230)	158	Cruising	2	20.8	0.9	2.2	6.7	1,771.5	3.3	0.1	0.4	1.1	279.9
		Mining	5.5	25.3	1.3	3.3	10.3	2,423.0	11.0	0.6	1.4	4.5	1,052.8
		Unloading	4	5.4	0.5	1.4	4.6	794.3	1.7	0.2	0.4	1.5	251.0
									16.0	***0.9***	***2.2***	***7.0***	***1583.7***
Hanson (DS-10)	0	Cruising	2	14.7	0.7	1.7	5.3	1,273.3	0.0	0.0	0.0	0.0	-
		Mining	5.5	23.5	1.0	2.5	7.7	1,989.9	0.0	0.0	0.0	0.0	-
		Unloading	4	16.2	0.7	1.9	6.3	1,392.8	0.0	0.0	0.0	0.0	-
									0.0	***0.0***	***0.0***	***0.0***	***0.0***
Suisun Associates (TS&G 230)	11	Cruising	2	20.8	0.9	2.2	6.7	1,771.5	0.2	0.0	0.0	0.1	19.5
		Mining	5.5	25.3	1.3	3.3	10.3	2,423.0	0.8	0.0	0.1	0.3	73.3
		Unloading	4	5.4	0.5	1.4	4.6	794.3	0.1	0.0	0.0	0.1	17.5
									1.1	***0.1***	***0.2***	***0.5***	***110.3***
Suisun Associates (DS-10)	0	Cruising	2	14.7	0.7	1.7	5.3	1,273.3	0.0	0.0	0.0	0.0	-
		Cruising	2	23.5	1.0	2.5	7.7	1,989.9	0.0	0.0	0.0	0.0	-
		Cruising	2	16.2	0.7	1.9	6.3	1,392.8	0.0	0.0	0.0	0.0	-
									0.0	***0.0***	***0.0***	***0.0***	***0.0***
Suisun Associates (Jerico Barge)	11	Cruising	2	8.5	0.4	0.9	2.6	717.4	0.1	0.0	0.0	0.0	7.9
		Mining	5.5	1.9	0.1	0.3	0.9	177.2	0.1	0.0	0.0	0.0	5.4
		Unloading	12	0.9	0.0	0.1	0.7	105.1	0.1	0.0	0.0	0.0	6.9
									0.2	***0.0***	***0.0***	***0.1***	***20.2***
Jerico	44	Cruising	2	8.5	0.4	0.9	2.6	717.4	0.4	0.0	0.0	0.1	31.6
		Mining	5.5	1.9	0.1	0.3	0.9	177.2	0.2	0.0	0.0	0.1	21.4
		Unloading	12	0.9	0.0	0.1	0.7	105.1	0.2	0.0	0.0	0.2	27.7
									0.8	***0.0***	***0.1***	***0.4***	***80.7***
Total Emisisons (tons per year)									**18.2**	**1.0**	**2.5**	**8.0**	**1794.9**

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Emissions_REV_BASELINE_2002-07 vs Actual 2009-11 12_10_11.xls

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Table D12. Emission Factors for Mining Equipment (2014) with Required Airborne Toxic Control Measures.

Equipment Name	Type	Manufacture Year [a]	Horsepower [a]	Load Factor [b]	Emission Factor (g/bhp-hr) [c,d]					Emission Rate (lb/hr)				
					NOx	PM	ROG	CO	CO2	NOx	PM	ROG	CO	CO2
~~Hanson American River~~	~~Tug (2 engines)~~	2003	1,710	0.5	6.93	0.29	0.68	1.97	568.3	13.1	0.5	1.3	3.7	1,071.2
Hanson San Joaquin River	Tug (2 engines)	2001	2,600	0.5	6.93	0.1	0.68	3.73	568.3	19.9	0.3	1.9	10.7	1,628.8
	Barge - Main Engine	1983	1,000	0.52	3.92	0.1	0.68	3.73	568.3	4.5	0.1	0.8	4.3	651.5
	Barge - Generator (Aux)	1984	265	0.43	3.79	0.1	0.81	3.73	568.3	1.0	0.0	0.2	0.9	142.8
Hanson TS & G	Barge - Thruster (Aux)	1984	304	0.43	3.79	0.1	0.81	3.73	568.3	1.1	0.0	0.2	1.1	163.8
	~~Barge - Main Engine~~	2001	1,100	0.52	6.93	0.29	0.68	1.97	568.3	8.7	0.4	0.9	2.5	716.7
	~~Barge - Monitor Pump (Aux)~~	2002	440	0.43	6.93	0.26	0.81	2.78	568.3	2.9	0.1	0.3	1.2	237.0
	~~Barge - Flood Pump (Aux)~~	2002	440	0.43	6.93	0.26	0.81	2.78	568.3	2.9	0.1	0.3	1.2	237.0
~~Hanson DS-10~~	~~Barge - Generator (Aux)~~	1984	375	0.43	4.73	0.32	1.07	4.33	568.3	1.7	0.1	0.4	1.5	202.0
	Tug (2 engines)	2001	1,060	0.5	6.93	0.29	0.68	1.97	568.3	8.1	0.3	0.8	2.3	664.0
Jerico Tug	Tug (generator)	2000	64	0.31	6.93	0.46	1.18	3.59	568.3	0.3	0.0	0.1	0.2	24.9
	Barge Generator (Aux)	2004	99	0.43	4.62	0.46	1.18	3.59	568.3	0.4	0.0	0.1	0.3	53.3
Jerico Barge	Barge Pump (Aux)	2001	230	0.43	6.93	0.26	0.81	2.78	568.3	1.5	0.1	0.2	0.6	123.9
Jerico Loader	Loader	2007	195	0.43	4.83	0.12	0.81	3.73	568.3	0.9	0.0	0.1	0.7	105.1

[a] Provided by Project Applicants.

[b] Based on information provided in Appendix B - Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, from CARB's *Technical Support Document: Initial Statement of Reason for Proposed Rule Making, Proposed Regulation for Commercial Harbor Craft,* September 2007.

[c] Assumes all Hanson engines manufactured in or prior to 2003 would meet USEPA Tier ~~2~~ 3 NOx + THC standard of ~~7.8~~ 4.6 grams per kilowatt-hour (~~5.8~~ 3.4 grams per brake-horsepower hour) by end of 2013. It is assumed that 100% of THC is ROC.

[d] CO2 emission factors derived from OFFROAD2007. Represents CO2 emission factors for diesel fueled engines.

Emissions_REV_BASELINE_2002-07 vs Actual 2009-11 12_10_11.xls

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Table D13. Emission Rates by Activity (2014)

Equipment - Activity	Emission Rate (lb/hr-equipment)				
	NOx	PM	ROG	CO	CO2
Hanson TS&G 230 - Mining					
San Joaquin Tug	19.9	0.3	1.9	10.7	1,628.8
TS&G - Barge - Main	4.5	0.1	0.8	4.3	651.5
TS&G - Barge - Gen - Aux	1.0	0.0	0.2	0.9	142.8
Total	***25.3***	***0.4***	***2.9***	***15.9***	***2,423.0***
Hanson TS&G 230 - Cruising					
San Joaquin Tug	19.9	0.3	1.9	10.7	1,628.8
TS&G - Barge - Gen - Aux	1.0	0.0	0.2	0.9	142.8
Total	***20.8***	***0.3***	***2.2***	***11.6***	***1,771.5***
Hanson TS&G 230 - Unloading					
TS&G - Barge - Main	4.5	0.1	0.8	4.3	651.5
TS&G - Barge - Gen - Aux	1.0	0.0	0.2	0.9	142.8
Total	***5.4***	***0.1***	***1.0***	***5.2***	***794.3***
Hanson DS-10 - Mining					
American River Tug	13.1	0.5	1.3	3.7	1,071.2
DS-10 - Barge (Main)	8.7	0.4	0.9	2.5	716.7
DS-10 - Barge (Generator)	1.7	0.1	0.4	1.5	202.0
Total	***23.5***	***1.0***	***2.5***	***7.7***	***1,989.9***
Hanson DS-10 - Cruising					
American River Tug	13.1	0.5	1.3	3.7	1,071.2
DS-10 - Barge (Generator)	1.7	0.1	0.4	1.5	202.0
Total	***14.7***	***0.7***	***1.7***	***5.3***	***1,273.3***
Hanson DS-10 - Unloading					
Barge - Main	8.7	0.4	0.9	2.5	716.7
Barge - Monitor Pump - Aux	2.9	0.1	0.3	1.2	237.0
Barge - Flood Pump- Aux	2.9	0.1	0.3	1.2	237.0
Barge - Gen - Aux	1.7	0.1	0.4	1.5	202.0
Total	***16.2***	***0.7***	***1.9***	***6.3***	***1,392.8***
Jerico Barge - Mining					
Jerico Barge - Generator	0.4	0.0	0.1	0.3	53.3
Jerico Barge - Monitor	1.5	0.1	0.2	0.6	123.9
Total	***1.9***	***0.1***	***0.3***	***0.9***	***177.2***
Jerico Barge - Cruising					
Jerico Tug - Main	8.1	0.3	0.8	2.3	664.0
Jerico Barge - Generator	0.4	0.0	0.1	0.3	53.3
Total	***8.5***	***0.4***	***0.9***	***2.6***	***717.4***
Jerico Unloading					
Loader	0.9	0.0	0.1	0.7	105.1
Total	***0.9***	***0.0***	***0.1***	***0.7***	***105.1***

L-52 cont.

Emissions_REV_BASELINE_2002-07 vs Actual 2009-11 12_10_11.xls

Table D14. Annual Emissions (2014) with Required Toxic Control Measures for Diesel Engines

Barge	Mining Events	Activity	Hours	Emission Rates (lb/hr)					Annual Emissions (tons per year)				
				NOx	PM	ROG	CO	CO2	NOx	PM	ROG	CO	CO2
Hanson (TS&G 230)	0	Cruising	2	20.8	0.3	2.2	11.6	1,771.5	0.0	0.0	0.0	0.0	-
		Mining	5.5	25.3	0.4	2.9	15.9	2,423.0	0.0	0.0	0.0	0.0	-
		Unloading	4	5.4	0.1	1.0	5.2	794.3	0.0	0.0	0.0	0.0	-
									0.0	*0.0*	*0.0*	*0.0*	*0.0*
Hanson (DS-10)	0	Cruising	2	14.7	0.7	1.7	5.3	1,273.3	0.0	0.0	0.0	0.0	-
		Mining	5.5	23.5	1.0	2.5	7.7	1,989.9	0.0	0.0	0.0	0.0	-
		Unloading	4	16.2	0.7	1.9	6.3	1,392.8	0.0	0.0	0.0	0.0	-
									0.0	*0.0*	*0.0*	*0.0*	*0.0*
Suisun Associates (TS&G 230)	0	Cruising	2	20.8	0.3	2.2	11.6	1,771.5	0.0	0.0	0.0	0.0	-
		Mining	5.5	25.3	0.4	2.9	15.9	2,423.0	0.0	0.0	0.0	0.0	-
		Unloading	4	5.4	0.1	1.0	5.2	794.3	0.0	0.0	0.0	0.0	-
									0.0	*0.0*	*0.0*	*0.0*	*0.0*
Suisun Associates (DS-10)	0	Cruising	2	14.7	0.7	1.7	5.3	1,273.3	0.0	0.0	0.0	0.0	-
		Cruising	2	23.5	1.0	2.5	7.7	1,989.9	0.0	0.0	0.0	0.0	-
		Cruising	2	16.2	0.7	1.9	6.3	1,392.8	0.0	0.0	0.0	0.0	-
									0.0	*0.0*	*0.0*	*0.0*	*0.0*
Suisun Associates (Jerico Barge)	0	Cruising	2	8.5	0.4	0.9	2.6	717.4	0.0	0.0	0.0	0.0	-
		Mining	5.5	1.9	0.1	0.3	0.9	177.2	0.0	0.0	0.0	0.0	-
		Unloading	12	0.9	0.0	0.1	0.7	105.1	0.0	0.0	0.0	0.0	-
									0.0	*0.0*	*0.0*	*0.0*	*0.0*
Jerico	0	Cruising	2	8.5	0.4	0.9	2.6	717.4	0.0	0.0	0.0	0.0	-
		Mining	5.5	1.9	0.1	0.3	0.9	177.2	0.0	0.0	0.0	0.0	-
		Unloading	12	0.9	0.0	0.1	0.7	105.1	0.0	0.0	0.0	0.0	-
									0.0	*0.0*	*0.0*	*0.0*	*0.0*
Total Emisisons (tons per year)									**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

0

Emissions_REV_BASELINE_2002-07 vs Actual 2009-11 12_10_11.xls

L-52
cont.

Comment Letter L

RESPONSE TO COMMENT SET L: APPLICANTS

L-1 This comment introduces the topics covered in the comment letter. Please see the following responses.

L-2 The Applicants assert that there is an important difference between a "lease renewal" and a "new lease." The latter term is used consistently in the Environmental Impact Report (EIR) to characterize the Project. It is clearly stated, and implicit throughout the analysis, that sand mining is an ongoing activity, and that the proposed Project would be a continuation of mining activities. If the Project is approved, however, the California State Lands Commission (CSLC) would write new lease agreements, with new terms and conditions. Therefore, the use of the term "new lease" is logical and appropriate. The use of this term has no bearing on the selection of the baseline for the analysis, or of any impact conclusion.

L-3 The minor changes in mining methods and equipment described in this comment do not result in the potential for a new or more significant impact. The EIR text in Section 2.0, Project Description, has been clarified to reflect these minor changes.

L-4 The Applicants reference the Hanson Environmental (2006) entrainment study conducted pursuant to a requirement of the National Marine Fisheries Service (NMFS) 2006 Biological Opinion. The referenced study was designed to assess whether juvenile salmon and/or steelhead are entrained into the hydraulic suction when it is positioned 3 feet off the bayfloor; it did not monitor fish and invertebrate entrainment during all phases of actual sand mining, comparable to the U.S. Army Corps of Engineers (ACOE) crab and fish entrainment monitoring studies of maintenance dredging in the Pacific Northwest (Armstrong 1981), or more recent studies by Woodbury (2008) at the Port Sonoma marina, by the ACOE in the Sacramento and Stockton ship channels (Mari-Gold Environmental Consulting, Inc. and Novo Aquatic Sciences, Inc. 2010, 2011), and by Applied Marine Science (AMS) et al. (2011) in the San Francisco Bay-Delta. As such, the Hanson Environmental (2006) study findings do not reflect actual sand mining impacts. Please see also the response to Comment L-6.

L-5 The commenter's assertion that the biological resources analysis in the EIR relies on an improper baseline is incorrect. The purpose of the referenced assessment of potential entrainment of marine fish and invertebrates from sand mining performed by AMS (2009b) and included in the EIR (Appendix E) was to determine (1) whether entrainment of fish and invertebrate species present in the sand mining lease areas had a reasonable likelihood of occurring and (2) if so, the relative magnitude of that entrainment relative to the regional population of that taxa, or, in the case of commercially important species, to its annual catch. The impact analysis contained in Section 4.1, Biological Resources, relies on this

analysis to determine whether the Project would have the potential for a significant impact on the environment, per the stated significance criteria.

The significance criteria concerning impacts to special-status species do not provide for an allowable limit of "take" before an impact is considered significant. Thus, even though current sand mining activities may be federally permitted to "take" a specified number of protected fish such as Chinook salmon, the identified loss of salmon may be potentially significant under the California Environmental Quality Act (CEQA). The significance criteria state that a biological resource impact is considered significant if "there is a potential for any part of the population of a special status species (such as State or federally endangered species) to be directly affected or indirectly harmed through the disturbance or loss of its habitat" (Section 4.1.4, Biological Resources). Thus, the significance criteria used in the EIR Biological Resources chapter require that any direct or indirect impacts to special-status species, sensitive biological habitat, fish movement and migration corridors, and fish populations that result from the proposed Project be considered significant.

L-6 The entrainment estimates presented in Section 4.1, Biological Resources, and detailed in Appendix E, were developed as part of the process of assessing whether entrainment from sand mining operations posed a significant risk to benthic and pelagic taxa inhabiting the mining leases and the Bay-Delta ecosystem as a whole. The entrainment assessment performed by AMS (Appendix E) takes the form of a literature review and preparation of entrainment estimates based upon available data and reasonable assumptions. This investigation did not include an empirical study of sand mining operations as a means to gauge the representativeness of the estimates. While a properly designed empirical study would be a valuable tool to better understand entrainment numbers and species associated with sand mining operations, conducting a field investigation of this nature and complexity was not performed at the outset of EIR scoping effort due to the high cost it would entail. Instead, AMS used available California Department of Fish and Game (CDFG) and other recent Bay-Delta data and sand mining operational information to develop an adequate understanding of potential entrainment of fish and invertebrates from sand mining dredging. As a result, AMS developed spreadsheet models to estimate potential entrainment of special-status species, commonly occurring species, and economically important fish and invertebrate taxa inhabiting Bay-Delta sand mining leases.

In Appendix E, AMS acknowledges that the data used in the modeling effort were not collected for this purpose; however, in the absence of sufficient directly applicable entrainment studies, these data were deemed to be both the best available and sufficient for the purpose of developing insight into potential entrainment occurring from sand mining dredging. The uncertainty associated with the model and its data sources is clearly summarized in the following passage from Appendix E, Section 2.1, page 2-1:

> "…because of the inherent uncertainty present in any fish sampling program regarding representativeness of data collected, the direct applicability of study results that reflect highly site specific environmental and biological community conditions, and the assumptions used to estimate entrainment numbers that must reflect multiple operational, seasonal, and natural life history difference, the entrainment estimates presented in this report should only be considered as "order-of-magnitude" estimates. It is because of this uncertainty in calculated estimates that AMS scientists have employed a preponderance of evidence approach, wherever feasible, to bracket or frame calculated entrainment estimates and the evaluation of the potential environmental impact resulting from sand mining entrainment."

For these reasons the model results are consistently referred to in the EIR, including Appendix E, as "estimates."

The entrainment estimates do not represent worst case loss estimates resulting in inflated projections of entrainment and overstating impacts. In both data input and model output, the modeling used averaging and other statistical methods to capture the expected range in environmental conditions, including fish populations. Similarly, the models used averages of past dredged area data generated from multiple years over the baseline period as well as catch per unit effort (CPUE) data from the entire year, rather than just from the periods when specific fish or invertebrate species are most abundant. As such, entrainment estimates do not represent an extreme case, but a reasonable and conservative expectation of the potential effect of entrainment of specific fish and invertebrate species by future sand mining activities.

In summary, the entrainment estimates presented in Appendix E and referenced in Section 4.1, Biological Resources, were used in the EIR impact analysis as indicators of whether entrainment is occurring, and where identified, the relative magnitude of that entrainment. These estimates are sufficient for the purpose of determining the significance of project impacts and whether mitigation is therefore required.

L-7 The EIR represents fish entrainment projections as estimates that have not been validated against actual fish entrainment figures that occur during sand mining. The projections of sand mining fish entrainment presented in the EIR represent the best available scientific data based on fish distribution within the San Francisco Bay-Delta, and reasonable assumptions, which are clearly stated in the entrainment study (Appendix E). The conclusion of a significant unavoidable impact to delta smelt and longfin smelt (Impact BIO-8) is based on the lack of a clear scientific and regulatory path to full mitigation of potential impacts to these species.

It should be noted that the impact analysis and many of the special-status fish protection measures presented in the EIR were developed either directly by, or in close coordination with, federal (NMFS and U.S. Fish and Wildlife Service [USFWS]) and/or State (CDFG) resource agencies. It should also be noted that fish entrainment monitoring conducted aboard the ACOE dredge ship *Essayons* in 2011, which also uses hydraulic dredging, entrained both longfin and delta smelt while actively dredging offshore Richmond, Pinole, and Suisun Bay (AMS et al. 2011), indicating that hydraulic suction dredging can and does entrain these species.

L-8 The sand lance, as discussed in both the entrainment assessment (Appendix E) and then repeated in Section 4.1, Biological Resources, is a species that lives in burrows in the seafloor and when threatened, takes refuge in its burrow. As a result, they are rarely caught in fish trawls but are readily entrained in suction dredging along with their burrow and all the sediment around it. As documented in the Gray's Harbor entrainment study (McGraw and Armstrong 1990), this species of fish can be entrained in substantial numbers. They occur as larvae in the Bay's plankton in very high numbers so can be expected to be a dominant species in Central Bay waters, but are not a dominant species in CDFG trawl data. Since the McGraw and Armstrong study is the only study to document the disparity between trawl data typically used to characterize fisheries populations and what species (such as the sand lance) that hydraulic dredging may impact, extrapolation of their findings to the Bay-Delta is appropriate. This case clearly demonstrates that the entrainment estimates for any one species based on CDFG trawl data can both under-estimate and over-estimate potential entrainment effects, and the estimates must be interpreted with this in mind. Other studies external to the Bay-Delta that were discussed in the entrainment assessment (Appendix E) and in Section 4.1, Biological Resources, provide additional context to support interpretation of the AMS entrainment model results.

The use of several significant figures in the Appendix E tables is not intended to suggest a higher level of accuracy that the entrainment study warrants, given the methodology used. As stated, the entrainment figures should be considered order-of-magnitude estimates.

L-9 The relationship between capture effectiveness by a trawl for a given fish or invertebrate species and the potential for entrainment by a suction dredge is unknown. It has been documented that the comparison of the two appears to be highly location- and species-specific, as demonstrated by the discussion of the sand lance in the previous response. Some species can avoid entrainment and some species cannot. Likewise, an adult salmon may have the speed and energy to escape entrainment, but a juvenile may not. Finally, as McGraw and Armstrong (1990) mention, habitat utilization plays a role and can account for why some fish may not be entrained by suction dredging and yet show up in trawl data and vice versa. Applying hypothetical and untested correction factors,

as suggested, would add additional complexity and uncertainty into the entrainment estimate. The computer models used to assess potential entrainment of fish and invertebrates were designed to provide order-of-magnitude estimates that could be placed into context with abundance estimates, commercial fish harvesting numbers, and other anthropogenic activities that entrain fish and invertebrates to determine the potential for significant impacts, as discussed in Section 4.1, Biological Resources.

L-10 and L-11 Habitat conditions at the proposed desalination facility and the power plant may be different than those encountered at the sand mining leases. However, plankton move and mix as a result of prevailing tidal currents in the Bay-Delta and are only partially influenced by local conditions. Where local site conditions might influence the presence or magnitude of a particular larval species, the issue was discussed in the entrainment assessment, as in the case of Pacific herring. Differences in salinity or other physical conditions can be expected to have some effect on plankton populations that are less tolerant of a range of conditions, but the main fish species for which entrainment estimates were calculated are found throughout the Bay, both in adult, juvenile, and larval life stages.

L-12 Please see the response to Comment L-6.

L-13 Please see the response to Comment L-6.

L-14 Please see the response to Comment L-6.

L-15 Crabs and shrimp are capable of avoiding capture in CDFG trawls, and use of CDFG trawl data to generate population estimates may therefore underestimate the actual population sizes of these taxa. As noted in the comment and detailed in the entrainment assessment (Appendix E) and in Section 4.1, Biological Resources, these catch efficiency factors are highly site specific and can vary greatly from one location to another. The commenter suggests that employing the Dredge Impact Model (DIM) entrainment-estimating methodology used in the Gray's Harbor Dungeness crab entrainment study (Wainwright et al. 1992, McGraw and Armstrong 1990) should have been used and a comparison of results provided. The entrainment analysis did precisely that for Dungeness crabs using the DIM model and the Gray's Harbor catch efficiency factor of 0.27 (Appendix E, page 2-13), which may or may not be appropriate for San Francisco Bay-Delta. It should be noted that entrainment results using the DIM model were more than ten times greater than the results from the model developed by AMS (Appendix E, page 4-13, Table 4-10). This higher estimate of entrainment for Dungeness crab using the DIM model is not surprising since the catch efficiency factor is based on the number of adult crabs present in the dredged main channel of Gray's Harbor Washington, which is the primary path for crab movements in and out of the estuary. No such comparable dredged shipping channel exists at the mouth of San Francisco Bay and migrating crabs

move in and out of the Bay along a much broader estuary entrance. As such, it is logical to assume that possible entrainment by sand mining operations in Central Bay would be lower than that estimated using the DIM model and employing the Gray's Harbor catch efficiency factor. The entrainment estimates from both models represent a small amount, less than one-tenth of one percent, of the average annual commercial catch over the period of 2000-2006.

Please see also the response to Comment L-6.

L-16 Please see the response to Comment L-6.

L-17 The statement that data collected in the entrainment study of salmon and steelhead, which was conducted for the Applicants (Hanson Environmental 2006) in compliance with a ACOE/NMFS permit requirement that showed no statistically significant differences between day and night sampling, is misleading. None of the sampling dates reported in that study coincided with the two-week peak salmon run in 2006 (Hanson Environmental 2006, page 22, Figure 6), and findings relative to entrainment during the peak salmon migration period are therefore viewed as inconclusive. Of the eight juvenile salmon entrained as reported in that study, seven were entrained at night and only one during daylight hours. Additionally, the sand mining methodologies employed by CEMEX, although not currently used by Hanson, are very similar to the revised mining method currently in use by Jerico Products, as stated in Comment L-3, and are not precluded from use by either company in future sand mining efforts.

The entrainment assessment conducted for this EIR (Appendix E) determined that there is the potential for entrainment of salmon. The NMFS Biological Opinion (NMFS 2006) stated that juvenile Chinook salmon are known to congregate in the deeper channels of the Bay-Delta where sand mining dredging occurs during the night, and forage in the shallower areas of the estuary during the day. As a result, the potential for entrainment by sand mining dredging is likely to be elevated at night. The study prepared for the Applicants (Hanson Environmental 2006) documented that entrainment of salmon can occur when salmon are present at the sand mining location and that when it occurs, there is a greater likelihood of it occurring at night, as stated in the NMFS Biological Opinion (NMFS 2006).

Restricting sand mining dredging at night during the Chinook salmon migration time period was determined to be an effective, feasible mitigation measure. The NMFS Biological Opinion (NMFS 2006) included the suspension of nighttime dredging during the spring salmon migration period as one of many potential actions that could help reduce the potential for entrainment of salmon.

L-18 The conclusion of a potentially significant impact for State and Federal listed salmon, steelhead, and green sturgeon was based on multiple sources, including the entrainment assessment prepared for this EIR (Appendix E), the natural

history of the species, and the NMFS Biological Opinion (NMFS, 2006). It was determined that the Project has the potential for entrainment, and therefore the loss, of a portion of the population of a protected species.

The NMFS Biological Opinion was prepared in response to a request from the ACOE under the requirements of the Federal Endangered Species Act (ESA) and the Magnuson-Stevens Fishery Management and Conservation Act, and not CEQA. The determination in Impact BIO-9 of the potential for significant impact to these species is consistent with the significance criteria used for biological resources (In Section 4.1, Biological Resources). The mitigation measures are similarly consistent, appropriate, proportional, and necessary to reduce identified potential significant impacts to migrating salmon.

L-19 The EIR text identified by the commenter (page 4.1-12, lines 12-24) was included at this point in the document to establish the general water depths that sand mining occurs within under current permit conditions. The intent was not to include a listing of all sand mining permit conditions that limit the locations where sand mining can legally occur within the Bay-Delta. That information is provided at other locations within the EIR. Please see EIR Section 1.3.2, Current Permits and Permit Conditions, in Section 1.0, Introduction.

L-20 In response to this comment, the text under "Special Status Species" of Section 4.1.1, Environmental Setting, in Section 4.1, Biological Resources, has been revised as follows:

> **Delta smelt (*Hypomesus transpacificus*).** Delta smelt is listed as a threatened species under the Federal ESA and an endangered species under the California ESA. The delta smelt is a small, slender-bodied fish that is able to tolerate a wide salinity range and is native to the Sacramento-San Joaquin Estuary. This species, which has a one-year life span, inhabits Delta waters between Cache Slough and the Sacramento Deep Water Ship Channel (upstream of Rio Vista) to San Pablo Bay. Juveniles and adults inhabit the brackish lower-salinity waters of the Sacramento-San Joaquin Delta, ~~lives primarily~~ along the freshwater edge of the saltwater-freshwater interface (approximately 2 ppt salinity). ~~of the Sacramento-San Joaquin Delta.~~

These revisions do not change the analysis or alter the conclusions regarding project impacts on biological resources.

L-21 In response to this comment, the EIR text regarding Delta smelt under "Special Status Species" in Section 4.1.1, Environmental Setting, in Section 4.1, Biological Resources, has been revised as follows:

> It is critical to note that the survival or abundance of multiple biological populations in the San Francisco Estuary, including delta smelt

populations, ~~is positively~~ exhibits a positive correlation ~~related to~~ with salinity levels, which are directly affected by the amount of freshwater flow reaching the western Delta~~,~~. The critical salinity level of Delta waters is frequently identified and referred to as ~~a relationship which is described in terms of~~ "X2", where "X" is the distance from the Golden Gate Bridge and "2" is where the salinity at the bottom of the water column is 2 practical salinity units (psu=ppt) (Hollibaugh 1996).

These revisions do not change the analysis or alter the conclusions regarding project impacts on biological resources.

L-22 The referenced statement is incorrect and was the result of a typographical/ editing error. The referenced EIR text regarding Delta smelt, under "Special Status Species" in Section 4.1.1, Environmental Setting, in Section 4.1, Biological Resources, has been revised as follows:

Page 4.1-17, Line 27: The species has been collected in large quantities in Suisun Bay and the western Delta ~~Central Bay~~.

Page 4.1-18, Line 1: This species was detected during CDFG surveys in ~~Central~~ Suisun Bay (CDFG 2000-2007).

These revisions do not change the analysis or alter the conclusions regarding project impacts on biological resources.

L-23 The referenced statement in the EIR does describe presence of longfin smelt in Central Bay.

L-24 The referenced statement is incorrect and was the result of a typographical/ editing error. The EIR text regarding Sacramento splittail under "Special Status Species" in Section 4.1.1, Environmental Setting has been revised as follows:

CDFG trawling records indicate that splittail occur in all portions of the Project area including Suisun ~~Central~~ Bay (Table 4.1-2) and the western Delta (Table 4.1-4) (CDFG 2000-2007).

These revisions do not change the analysis or alter the conclusions regarding project impacts on biological resources.

L-25 In response to this comment, the EIR text regarding Sacramento splittail under "Special Status Species" in Section 4.1.1, Environmental Setting has been revised as follows:

Remnant populations of splittail in the Delta require adequate freshwater outflow and periodic floodplain inundation. This species was formerly

listed as a Federal threatened species and was delisted in 2003~~ despite a strong consensus by scientists that it should retain its protected status~~.

These revisions do not change the analysis or alter the conclusions regarding project impacts on biological resources.

L-26 The CSLC has an independent duty as the lead agency to avoid or substantially lessen identified significant effects. The CSLC cannot defer the formulation of mitigation measures to other agencies; lead agencies must do all that is feasible on their part to address significant impacts even where a subsequent permit from another agency is necessary, pursuant to State CEQA Guidelines section 15126.4.

As stated in both Mitigation Measures (MMs) BIO-8a and MM BIO-8b, it is anticipated that the details of measures required to mitigate the take of delta smelt and longfin smelt will be specified in an Incidental Take Permit (ITP) that can only be issued by the CDFG. The CSLC staff finds the Applicants' suggestions for altering MMs BIO-8a and MM BIO-8b to be infeasible, since accepting the requested revisions would constitute impermissible deferral of mitigation.

First, MM BIO-8a does not, as the Applicants suggest, foreclose the possibility that other measures may be used to minimize take. CSLC staff acknowledges that the actual suite of measures to minimize take, as well as the specific parameters of seasonal and spatial limitations on sand mining, will be specified in the ITP. MM BIO-8a was developed through direct consultation with CDFG, as required by State CEQA Guidelines section 15086. Furthermore, the Applicants' suggested revisions to MMs BIO-8a and BIO-8b are infeasible, because the CSLC cannot compel the Applicants to apply for an ITP, nor can the CSLC compel the CDFG to issue an ITP. The determination of whether an ITP can be issued rests solely with the CDFG and therefore, the CSLC must do all that it can to apply measures independently. The CSLC cannot condition its approval on a mitigation measure that relies on the completion of a process over which the CSLC has no control; therefore, MM BIO-8a was developed to provide for minimization of take of listed species to the extent practicable and feasible at this time, while allowing CDFG the flexibility to set the specific parameters of this measure in any ITP that may be developed.

L-27 As noted in the response above, details of measures required to mitigate the take of Chinook salmon may be specified in an ITP issued for this Project by the CDFG. CSLC staff has consulted with the CDFG regarding the feasibility of MM BIO-9b (seasonally restricting sand mining to daylight hours) and believes it to be feasible and necessary to avoid potential take of listed species. As described in the previous response, the CSLC has an independent duty as the lead agency to avoid or substantially lessen identified significant effects. The CSLC cannot defer the formulation of mitigation measures to other agencies; lead agencies must do

all that is feasible on their part to address significant impacts even where a subsequent permit from another agency is necessary, pursuant to of the State CEQA Guidelines section 15126.4. Accepting the requested revisions would constitute impermissible deferral of mitigation.

L-28 This comment accurately reflects the assumptions and conclusions of the air quality analysis presented in EIR Section 4.5, Air Quality.

L-29 and L-30 These comments contain new information that alters the project description and the air quality analysis provided in the Revised Draft EIR. Consequently, the text of the Revised Draft EIR is revised as shown below. This is not "significant new information," as defined in State CEQA Guidelines section 15088.5, because it would not cause a new significant environmental impact or increase the severity of an impact previously identified in the EIR: there would be no increase in mining activity above baseline levels until 2014, at which time the Applicants would complete engine upgrades. Therefore, these changes do not trigger the requirement to recirculate the Draft EIR.

EIR Section 2.3.1, Project Action, is revised as follows and Table 2-1 is revised to include the new information:

> As Table 2-1 indicates, the Applicants are proposing adjustments to the allowed annual volume of sand that may be mined from each lease area, relative to the permitted annual mining volumes during the previous 10-year lease period. Overall, the Applicants are proposing an increase in permitted mining volume of 350,000 cy/yr from the CSLC lease areas. The Applicants are also proposing a decrease in permitted mining volume of 550,000 cy/yr from the private lease area. The net change from all lease areas, including both the CSLC lease areas and the private lease area, would be a decrease of 200,000 cy/yr in the allowed mining volume. This EIR, however, uses the actual mining volumes based on the years 2002 to 2007 as the baseline for the impact analysis, as discussed in Section 1.0, Introduction. <u>The Applicants are proposing to mine no more than the baseline level of 1,426,650 cy/yr until 2014, when upgrades to diesel engines used to power mining equipment are required to be completed (see Section 4.5, Air Quality). Beginning in 2014, the Applicants are proposing to mine up to the full amount indicated in Table 2-1, that is, 2,040,000 cy/yr if approved by the Commission.</u>

The same changes are made to the Executive Summary (under "Description of Proposed Project" and in Table ES-1).

In addition, Impact AIR-1, in Section 4.5.4, Impact Analysis and Mitigation, of Section 4.5, Air Quality, is revised as follows:

Impact AIR-1: Emissions of criteria pollutants

Sand mining activities would result in emissions of criteria air pollutants that may conflict with or obstruct implementation of an applicable air quality plan or may violate an air quality standard or contribute significantly to an existing violation (Less than Significant, Class III).

Tugboat engines, barge engines, and auxiliary engines/generators used during mining and offloading events would generate emissions of criteria pollutants. Criteria pollutants from these sources were evaluated based on emission factors derived from the California Air Resources Board's (CARB's) OFFROAD model, CARB's recommended methodologies for estimating emissions for commercial harbor craft (CARB 2007c), and detailed operational information provided by the Applicants. Pursuant to Title 17 of the California Code of Regulations, section 93118.5, both Hanson and Jerico would be required to upgrade their marine vessel engines according to CARB's compliance schedule, as shown in Table 4.5-6.

Table 4.5-6. Sand Mining Equipment Replacement Compliance Dates as Required by CARB

Equipment (Applicant)	Model Year/Tier	CARB Compliance Date
Hanson		
American River Tug	2003/Tier 1	12/31/2018
San Joaquin River Tug	2001/Tier 1	12/31/2017
TS&G Dredge Barge – Main Engine	1983/Tier 0	12/31/2013
TS&G Dredge Barge – Generator	1984/Tier 0	12/31/2013
TS&G Dredge Barge – Thruster Pump	1984/Tier 0	12/31/2013
DS-10 Dredge – Main Engine	2001/Tier 0	12/31/2017
DS-10 Dredge – Monitor Pump (Hanson)	2002/Tier 1	12/31/2017
DS-10 Dredge – Flood Pump	2002/Tier 1	12/31/2017
DS-10 Dredge – Main Generator	1984/Tier 0	12/31/2013
Jerico		
Tug – Main Engine	2001/Tier 1	12/31/2017
Tug – Generator	2000/Tier 1	12/31/2015
Dredge Barge – Generator	2004/Tier 2	Not Applicable
Dredge Barge – Pump	2001/Tier 1	12/31/2017

Hanson has withdrawn its proposal to install the CleanAIR Systems E-POD technology (CleanAIR Systems 2011a) that would be supplied by Caterpillar. ~~Hanson has committed to installing new emission reduction retrofits on the San Joaquin River Tug and TS&G Barge propulsion engines by the third quarter of 2012, which would be in advance of the applicable replacement compliance dates.~~

~~The planned retrofits would include the CleanAIR Systems E-POD technology (CleanAIR Systems 2011a) that would be supplied by Caterpillar. E-POD combines a selective catalytic reduction system with either oxidation catalysts, diesel particulate filters, or diesel oxidation catalysts. The technology uses an ammonia-based reductant that reacts over a catalyst to convert NO_x to N_2 and H_2O. CleanAIR Systems estimates that the E-POD emission control system would reduce Hanson's Tier 0 vessel propulsion engine NO_x emissions by approximately 80 percent (CleanAir Systems 2011b). Hanson's planned engine retrofits are considered "Applicant Proposed Measures" (see Section 4.0, Environmental Analysis) and are considered a part of the Project design.~~

Based on the Applicants' proposal (as revised in Applicants' comments on the RDEIR), ~~T~~this emissions analysis assumes that the mining levels will not exceed the annual baseline level of 1,426,650 cubic yards per year (cy/yr) until 2014, when upgrades to the TS&G barge engines are required to be completed, as indicated in Table 4.5-6. Beginning in 2014, the mining volume could increase to the full amount proposed by the Applicants, that is, 2,040,000 cy/yr if approved by the CSLC and other regulatory agencies. ~~includes several scenarios for comparison, including the future (2012) with no new emission controls (for informational purposes only), future (2012) with Hanson's planned retrofits for half the year only, future (2013) with Hanson's planned retrofits for the entire year, and future (2014) with required regulatory minimum upgrades only, but without Hanson's planned engine retrofits (for informational purposes only). To determine the net change in emissions that would result from the proposed Project, b~~ Baseline emissions were calculated based on the annual average level of mining that occurred during the five-year period between July 2002 and June 2007 (approximately 1,426,650 cy/yr). Project emissions were based on ~~and~~ the proposed mining volume of 2,040,000 cy/yr beginning in 2014.

Based on ~~these data and~~ the assumption that approximately 2,000 cubic yards of sand ~~would be~~ are mined during a single mining event, the annual average baseline is approximately 713 mining events and there could eventually be as many as 1,021 mining events under the proposed Project, beginning in 2014. Therefore, the proposed Project could eventually result in a net increase of 308 mining events per year above baseline conditions. To determine offloading emissions that would be

associated with a single mining event, it was assumed that offloading would take between four and 12 hours per event.

Emission estimates are presented in Table 4.5-7 below. Because, as proposed by the Applicants, the mining volume would not exceed the baseline level until 2014, emissions before 2014 would not exceed baseline levels. ~~Assuming the Project would commence operations in 2012, increases in NOx emissions would violate the BAAQMD threshold in effect at the time of the Project NOP (15 tons per year) (BAAQMD 1999) if the planned emission control retrofits were not implemented. However, with Hanson's planned emission retrofits that would be installed on the engines of the San Joaquin River Tug and the TS&G Barge by the third quarter of 2012, emissions of NOx would be reduced substantially. Even with only one half year of the planned retrofit emission reductions, annual increases in NOx emissions in 2012 would be 11.7 tons per year (below the threshold of 15 tons per year), and starting in 2013, the planned retrofits would result in net NOx reductions of approximately 35 tons per year compared to the annual average baseline. At these levels, the emissions would be less than significant and no additional mitigation would be required.~~

By December 31, 2013, all engines manufactured in or prior to the year 1985 would have to be upgraded to meet U.S. EPA Tier 2 standards as required by CARB and shown in Table 4.5-6. ~~For informational purposes only,~~ Table 4.5-7 ~~also~~ shows the maximum ~~NO_x~~ emissions that would occur in 2014~~, without Hanson's planned engine retrofits, but~~ with the required upgrade to Tier 2 standards, and the increase in mining volume to the full amount proposed by the Applicants, 2,040,000 cy/yr if approved by the CSLC and other regulatory agencies. With the upgrade to Tier 2 standards, and even with the potential increase in mining volume, NO_x emissions would be a maximum of 12 tons per year higher than the baseline, which is less than the BAAQMD significance threshold of 15 tons per year. As shown in Table 4.5-7, increases in emissions of other criteria pollutants would also be below the BAAQMD significance threshold. Future engine upgrades, according to the schedule shown in 4.5-6, would further reduce Project emissions. The impact is therefore less than significant. ~~.Therefore, without Hanson's planned installation of the CleanAIR Systems retrofits, emissions would be considered significant until 2014, when mandatory engine upgrades would be in place.~~

Table 4.5-7. Estimated Annual Project Criteria Pollutant

~~Scenario~~	~~Annual Emissions (tons per year)~~			
	~~NO_x~~	~~PM~~	~~ROG~~	~~CO~~
~~**Annual Average (2002 – 2007) Baseline**~~				
~~Hanson (TS&G)~~	~~42.7~~	~~1.5~~	~~3.7~~	~~11.7~~
~~Hanson (DS-10)~~	~~32.6~~	~~1.3~~	~~3.3~~	~~10.4~~
~~Suisun Assoc. (TS&G)~~	~~1.8~~	~~0.1~~	~~0.2~~	~~0.5~~
~~Suisun Assoc. (DS-10)~~	~~0.7~~	~~0.0~~	~~0.1~~	~~0.2~~
~~Suisun Assoc. (Jerico)~~	~~0.4~~	~~0.0~~	~~0.1~~	~~0.2~~
~~Jerico~~	~~1.9~~	~~0.1~~	~~0.3~~	~~0.9~~
~~Cemex~~	~~4.8~~	~~0.2~~	~~0.4~~	~~1.4~~
~~*TOTAL*~~	~~*84.8*~~	~~*3.1*~~	~~*8.0*~~	~~*25.3*~~
~~**Future (2012) – No New Emission Controls**~~				
~~Hanson (TS&G)~~	~~128.1~~	~~4.4~~	~~11.2~~	~~35.1~~
~~Hanson (DS-10)~~	~~0.0~~	~~0.0~~	~~0.0~~	~~0.0~~
~~Suisun Assoc. (TS&G)~~	~~12.1~~	~~0.4~~	~~1.1~~	~~3.3~~
~~Suisun Assoc. (DS-10)~~	~~0.0~~	~~0.0~~	~~0.0~~	~~0.0~~
~~Suisun Assoc. (Jerico)~~	~~1.4~~	~~0.1~~	~~0.2~~	~~0.7~~
~~Jerico~~	~~1.4~~	~~0.1~~	~~0.2~~	~~0.7~~
~~*TOTAL*~~	~~143.1~~	~~4.9~~	~~12.6~~	~~39.9~~
~~*Change from Existing*~~	~~*58.3*~~	~~*1.8*~~	~~*4.6*~~	~~*14.5*~~
~~**Future (2012) - With Hanson Proposed Retrofits for Half Year Only**~~				
~~*TOTAL*~~	~~96.4~~	~~--~~	~~--~~	~~--~~
~~*Change from Existing*~~	~~*-11.7*~~	~~*Further Reductions*~~		~~N.A.~~
~~BAAQMD Threshold~~	~~15~~	~~15~~	~~15~~	~~N.A.~~
~~Significant?~~	~~No~~	~~No~~	~~No~~	~~No~~
~~**Future (2013) - With Hanson Proposed Retrofits for All Year**~~				
~~*TOTAL*~~	~~*49.7*~~	~~--~~	~~--~~	~~--~~
~~*Change from Existing*~~	~~*-35.0*~~	~~*Further Reductions*~~		~~N.A.~~
~~Significant?~~	~~No~~	~~No~~	~~No~~	~~No~~
~~**Future (2014) – With Required Regulatory Minimum Upgrades Only**~~				
~~*TOTAL*~~	~~*96.7*~~	~~--~~	~~--~~	~~--~~
~~*Change from Existing*~~	~~*12.0*~~	~~*Further Reductions*~~		~~N.A.~~
~~Significant?~~	~~No~~	~~No~~	~~No~~	~~No~~

~~Notes: see Appendix D for all emissions factors and other assumptions used to estimate emissions.~~
~~N.A.: Not applicable.~~

Scenario	Annual Emissions (tons per year)			
	NO_x	**PM**	**ROG**	**CO**
Annual Average (2002 – 2007) Baseline				
Hanson (TS&G)	42.7	1.5	3.7	11.7
Hanson (DS-10)	32.6	1.3	3.3	10.4
Suisun Assoc. (TS&G)	1.8	0.1	0.2	0.5
Suisun Assoc. (DS-10)	0.7	0.0	0.1	0.2
Suisun Assoc. (Jerico)	0.4	0.0	0.1	0.2
Jerico	1.9	0.1	0.3	0.9
Cemex	4.8	0.2	0.4	1.4
TOTAL	*84.8*	*3.1*	*8.0*	*25.3*
Future (2014) – With Required Regulatory Minimum Upgrades Only				
Hanson (TS&G)	85.7	4.4	11.2	35.1
Hanson (DS-10)	0.0	0.0	0.0	0.0
Suisun Assoc. (TS&G)	8.1	0.4	1.1	3.3
Suisun Assoc. (DS-10)	0.0	0.0	0.0	0.0
Suisun Assoc. (Jerico)	1.4	0.1	0.2	0.7
Jerico	1.4	0.1	0.2	0.7
TOTAL	*96.7*	*4.9*	*12.6*	*39.9*
Change from Existing	***12.0***	***1.8***	***4.6***	***14.5***
BAAQMD Significance Threshold	15	15	15	N.A.
Significant?	No	No	No	No

Notes: Please see Appendix D for all emissions factors and other assumptions used to estimate emissions.
N.A.: Not applicable.

L-31 MM AIR-2 is required to ensure that the Applicants track Project greenhouse gas (GHG) emissions accurately and establish a plan for emissions reduction, and is, therefore, appropriate as written.

L-32 The significance criteria or thresholds of significance for special status species used in the EIR are not unusual. Commonly accepted standards of practice under CEQA generally regard any loss of special status species and their habitat as a significant impact. As the lead agency under CEQA, the CSLC has the authority to establish significance criteria on a case-by-case basis. (*Oakland Heritage Alliance v. City of Oakland* (2011) 195 Cal.App.4th 884, 896.) The EIR used significance criteria appropriate for the Project.

The State CEQA Guidelines do not contain recommended thresholds of significance for analyzing impacts in an EIR. The mandatory findings of significance contained in State CEQA Guidelines section 15065 and the "discretionary thresholds" from Appendix G to the State CEQA Guidelines are not applicable. The mandatory findings are used to determine whether, as an initial matter, an EIR must be prepared, not to evaluate impacts in the EIR: "A lead

agency shall find that a project may have a significant effect on the environment and thereby *require an EIR to be prepared* for the project" where any of several conditions may occur. (Emphasis added.) (1 and 2 Kostka & Zischke, Practice Under the California Environmental Quality Act (Cont.Ed.Bar 2011) sections 13.12, 20.65).

The Environmental Checklist Form contained in Appendix G to the State CEQA Guidelines contains questions about numerous environmental factors that may be affected by a project. The checklist is a suggested form for meeting the requirements of an initial study but its use is not required. As stated in the Note at the beginning of the checklist, the questions "do not necessarily represent thresholds of significance," and nowhere in the State CEQA Guidelines is their use as significance criteria recommended. In many cases the questions do not provide specific criteria for determining whether impacts are significant.

Regarding special status species, the first Appendix G checklist question under Biological Resources asks "Would the project: a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?" It does not specify the level of impact that would be significant.

The pertinent significance criterion in the EIR quantifies the level of impact considered significant as any take of a special status species: "A biological resource impact is considered significant if there is a potential for the Project to 'take' any part of the population of a special status species (such as State or federally endangered species) through direct effects or indirect harm through the disturbance or loss of its habitat." Further, it is reasonable to conclude that entrainment of a special status species is a direct substantial adverse effect under the Appendix G checklist question quoted above. Therefore, the significance criterion in the EIR is consistent with the Appendix G checklist question and provides the necessary specificity of when an impact is significant.

L-33 Please see the response to Comment L-26. Because the Project's significant impacts on longfin and delta smelt will not be fully mitigated under CEQA at the time the EIR is considered for certification by the CSLC, it would be necessary for the CSLC to adopt a Statement of Overriding Considerations to approve the Project. CSLC staff acknowledges that for CDFG to issue an ITP, the impacts of the authorized take must be minimized and fully mitigated. However, the CSLC cannot control whether an ITP is actually issued in the future and therefore cannot rely on that future event to reach its significance determination in the EIR.

While the CSLC staff has proposed all that is feasible at this time to avoid or lessen the significant impact by imposing the mitigation specified in MMs BIO-8a and 8b, CDFG is the agency with the appropriate expertise and jurisdiction to

determine whether there are feasible conditions of an ITP that would fully mitigate the impact of the taking. CSLC staff expects that CDFG would develop measures through the ITP process that fully mitigate the impacts of the taking, and presumably reduce the CEQA impacts to a less-than-significant level. Therefore, although the CSLC would be required to adopt a Statement of Overriding Considerations to approve the Project, CDFG would not be bound to make the same significance determination, and, in all likelihood, would not be required to adopt a Statement of Overriding Considerations, if it finds that the measures it develops and includes in an ITP minimize and fully mitigate the impacts of the authorized take.

As explained in Response L-32, the "established significance thresholds" referred to in Section 6.2 of EIR Section 6.0 are those listed in Section 4.1.3 of the EIR. The following clarification has been added to the text of Section 6.2:

> **6.2 SIGNIFICANT ENVIRONMENTAL EFFECTS OF PROPOSED PROJECT THAT CANNOT BE AVOIDED AND CANNOT BE MITIGATED TO A LESS-THAN-SIGNIFICANT LEVEL**
>
> Section 4.0, Environmental Analysis, presents the analysis of the potential environmental impacts associated with the proposed San Francisco Bay and Delta Sand Mining Project (Project) over the next 10 years. Effects on all potentially affected environmental resources were evaluated to determine any impacts that would remain significant after mitigation. Implementation of all mitigation measures (MMs) identified in Section 4.0, Environmental Analysis, would reduce most significant impacts to less-than-significant levels. The Project would result in a significant impact to delta smelt and longfin smelt as a result of entrainment and mortality during sand mining operations that impacts adult life stages of the delta smelt and longfin smelt, thereby exceeding the established significance thresholds <u>stated in Section 4.1.3.</u>

The comment states that a lead agency can rely on existing legal standards to support a less-than-significant finding, citing *Tracy First v. City of Tracy* (2009) 177 Cal.App.4th 912, 933. In that case, the court held that it was sufficient to rely on building energy efficiency standards to determine whether an energy impact was significant. Building codes and standards should be distinguished from the conditions listed in section 2081(b), which are repeated below, are not standards that can be implemented like a formula in a building code:

(1) The take is incidental to an otherwise lawful activity.

(2) The impacts of the authorized take shall be minimized and fully mitigated…

(3) The permit is consistent with any regulations adopted pursuant to Sections 2112 and 2114.

(4) The Applicant shall ensure adequate funding to implement the measures required by paragraph (2), and for monitoring compliance with, and effectiveness of, those measures.

To issue an ITP, the CDFG must develop specific measures on a case-by-case basis that satisfy the conditions above. It would be inappropriate to rely on measures that have not yet been developed to determine that the legal standard has been met.

The comment also raises the issue of allowing individual mitigation measures to rely on specific performance criteria. The general rule according to the State CEQA Guidelines is that formulation of mitigation measures should not be deferred to a future date. However, it is not considered an impermissible deferral if performance standards are specified that would mitigate the significant effect of the project and they may be accomplished in more than one specified way (State CEQA Guidelines, § 15126.4, subd. (a)(1)(B)).

The case cited in the comment, *Defend the Bay v. City of Irvine* (2004) 119 Cal.App.4th 1261, is distinguishable from the situation here. In *Defend the Bay*, the EIR was for a General Plan amendment and zoning change. The court explained that at that early stage of the planning process, it was sufficient to specify the criteria to be met when mitigation was known to be feasible for the project's significant effects and the agency committed to that mitigation (*Id*. at p. 1276).

In the situation with sand mining, the EIR is not analyzing a project in the early planning stage; instead, it evaluates a project-specific activity that is likely to entrain delta and longfin smelt. As described in the EIR's Residual Impacts section for MMs BIO-8a and 8b, there are currently no broadly applied programs for mitigating impacts to these species and therefore the success of the mitigation measures is not known with certainty. The CSLC staff consulted with the CDFG to develop MMs BIO-8a and 8b. Implementation of these measures is expected to both reduce and offset impacts related to incidental take through entrainment, but not enough to ensure the impacts would be reduced to a less-than-significant level under CEQA.

While it is expected that the CDFG will, in its permitting process for an ITP, develop specific measures that will fully mitigate the impacts identified in the EIR (assuming the EIR is certified), unlike the situation in *Defend the Bay*, there are no other feasible mitigation measures known to the CSLC available at this time to ensure impacts would be reduced to a less-than-significant level under CEQA. It should be noted that the regulations for ITPs allow "the use of new measures or other measures without an as yet established record of success which have reasonable basis for utilization and a reasonable prospect for success." (Cal. Code Regs., tit. 14, § 783.4, subd. (c)). Because longfin smelt was listed relatively recently, the CDFG may need to rely on this provision in issuing an ITP. Under CEQA, compliance with the law, in this case the ITP process, is not

necessarily sufficient to make a finding that that the impact is less than significant (*Californians for Alternatives to Toxics v. Dept. of Food and Agriculture* (2005) 136 Cal.App.4th 1, 10).

CSLC staff acknowledges there is uncertainty concerning the estimates of entrainment losses provided in the entrainment study, *Assessment and Evaluation of Fish and Invertebrate Entrainment Effects from Commercial Aggregate Sand Mining in San Francisco Estuary* (Entrainment Study) (EIR, Appendix E). The study clearly acknowledged this uncertainty regarding the data on page E-14, last paragraph:

> However, because of the inherent uncertainty present in any fish sampling program regarding representativeness of data collected, the direct applicability of study results that reflect highly site specific environmental and biological community conditions, and the assumptions used to estimate entrainment numbers that must reflect multiple operational, seasonal, and natural life history difference, the entrainment estimates presented in this report should only be considered as "order-of-magnitude" estimates. It is because of this uncertainty in calculated estimates that AMS scientists have employed a preponderance of evidence approach, wherever feasible, to bracket or frame calculated entrainment estimates and the evaluation of the potential environmental impact resulting from sand mining entrainment.

Additional disclosure concerning the uncertainty of the data is explained on page E-29, first paragraph:

> There are two main areas of uncertainty in using the CDFG trawl data and calculated abundance indices in place of population estimates: (1) the sampling does not follow a randomized design, and (2) the collection efficiency of an individual trawl relative to what would be entrained via dredging operations is unknown. However, lacking better data or estimates of abundance for target species for the time period during which these calculations are being estimated, it was determined that using the CDFG data to calculate abundance indices was the best available approach and that comparisons of entrained fish or macroinvertebrates to these abundance indices would provide a meaningful approximation of the severity of the potential impact.

The purpose of the Entrainment Study was to analyze the potential for the Project to result in the entrainment of species, and to support the CEQA analysis of biological resource impacts. The Entrainment Study does not itself assess whether the entrainment of species would cause a significant impact under CEQA. Impact BIO-8 in Section 4.1, Biological Resources, relies on the analysis in the Entrainment Study and applies the stated significance criteria to reach a conclusion of significance. Because there is uncertainty in the calculated

estimates in the Entrainment Study as described above, the EIR takes the conservative and reasonable approach of analyzing the potential effects of the Project's permitted mining volume, rather than the incremental impact that would result from the increase over baseline conditions.

L-34 The discussion of the Environmentally Superior Alternative referenced in the comment, in Section 6.0, Other Required CEQA Sections and Environmentally Superior Alternative, fulfills the CEQA requirement to identify the Environmentally Superior Alternative from among the alternatives examined in the EIR. Through careful consideration of the likely significance and severity of the impacts associated with each alternative, the CSLC staff has concluded that the Reduced Project Alternative is the Environmentally Superior Alternative, as discussed in Section 6.4, Environmentally Superior Alternative.

L-35 This comment reviews some of the findings of the bathymetric and hydrodynamic study presented in Appendix G and Sections 4.2, Mineral Resources, and 4.3, Hydrology and Water Quality, of the EIR, and expresses concurrence with some of the conclusions of less than significant impacts.

L-36 The bathymetric and hydrodynamic study presented in Appendix G of the EIR clearly states that the estimate of remaining resource is based on a calculation of the volume of sediment above -90 ft MLLW and below -3 ft MLLW. As stated in Section 2.0, Project Description, 90 feet is the maximum depth at which the existing mining equipment can operate.

L-37, L-38, and L-39 The surveys used in the bathymetry change analysis were of adequate quality and consistency, covered a long time period, and showed consistent trends in bathymetry change over time.

Modeling results do not show "deepening of the southern, mined part of the lease." Modeling results shown in Figure 4-39 of Appendix G in the EIR show deepening of the shallow area to the west (downstream) of the mined area (i.e., the mining hole), not deepening within the mining hole. This is consistent with typical bottom erosion/accretion trends observed for bedload transport; sediment is deposited at the upstream end of the hole, and is mobilized at the downstream end.

L-40, L-41, and L-42 CEQA requires that a lead agency identify feasible mitigation measures capable of reducing or eliminating identified significant impacts (State CEQA Guidelines § 15126.4). The Applicants have not provided an economic analysis to substantiate their claims that BIO-8a, BIO-9a, and BIO-9b are infeasible. The statement in the comment that "MM BIO-8a recommends *prohibiting* sand mining form December 1 to June 30…" (emphasis added) is incorrect. MM BIO-8a does not say "prohibit;" it says "restrict." Further, this measure leaves the specific parameters of this restriction, in terms of degree, location, and duration, to the expert judgment of the CDFG. Because of this, the

commenter's assertion of economic infeasibility is unsupported by fact. Please also see the responses to Comments L-26 and L-27.

L-43 Please see the response to Comments L-40, L-41, and L-42.

L-44 Please see responses to Comments L-45 through L-51.

L-45 As stated in the discussion of Impact BIO-6 in Section 4.1, Biological Resources, operation of the sand mining dredge near Harding, Shag, and Arch rocks, could cause mechanical damage to the benthic community inhabiting the hard substrate areas, which could result in a significant impact to these biotic communities. MM BIO-6 is necessary to mitigate this impact. These hard substrate features are well-known and shown on navigational charts. The requirement to maintain a 100-foot buffer around these features is therefore clear, feasible, and necessary.

L-46 and L-47 Please see the responses to Comments L-26 and L-40, L-41, and L-42.

L-48 and L-49 Please see the responses to Comments L-27 and L-40, L-41, and L-42.

L-50 Please see the response to Comment L-31.

L-51 Please see the responses to Comments L-41, L-42, and L-43, and to L-45 through L-50.

L-52 This comment contains air emissions calculations prepared by the Applicants, and in support of Comment L-30. These calculations are not used in the determination of air quality impacts or mitigation measures.

REFERENCES CITED IN RESPONSES TO COMMENT SETS A-L (INCLUDES ONLY NEW REFERENCES NOT CITED IN THE REVISED DRAFT EIR)

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