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Mr. Lee Cover
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Subject: TRC's review of the Air Quality Section of the SLC Draft EIR for Lehigh Hanson's San Francisco Bay and Delta Sand Mining Lease Renewal.

Dear Lee,

TRC Solutions Inc. (TRC) was requested by Hanson Aggregates West Region to provide a 3rd party review of the States Land Commission (SLC) Draft EIR for the San Francisco Bay and Delta Sand Mining Lease renewal (July 2010) specific to the Air Quality Section found in this document. Our review findings are summarized and provided in the attached report.

Please let me know if you have any questions regarding our findings.

Sincerely,

Douglas Wolf

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Executive Summary

The States Land Commission (SLC) prepared a Draft EIR for the San Francisco Bay and Delta Sand Mining lease renewal in July 2010. The Draft EIR addresses mining activities on parcels within the Central Bay, Middle Ground Shoal, and area north of the federal navigation channels of the Western Delta as well as offloading of mined materials at several facilities around the Bay and Delta ("Project"). The new 10 year lease period is valid through 2018. For the purpose of this evaluation the Project's annual mining volume will increase from its base year (1,245,318 yd^3 – 2007) to 2,040,000 yd^3. The Draft EIR assessed emissions associated with this increase in mining volume and recommended implementation of two mitigation measures to reduce potential air quality impacts. TRC reviewed the SLC assessment and has provided comments on the following technical areas:

- Applicability of CEQA Guidelines with respect to CO_2 impacts
- CO_2 Emission Factor Accuracy
- NO_x Tier 2 Emission Factor Accuracy
- Greenhouse Gas Assessment completeness

TRC has identified several areas where emissions have been overestimated resulting in an overly conservative statement of the project impacts. TRC has provided a re-calculation of the emissions used, and has reflected the approximate reduction in the Project's overall emission contribution.

Introduction

The States Land Commission (SLC) has prepared a Draft EIR for the San Francisco Bay and Delta Sand Mining Lease renewal (July 2010). The Draft EIR addresses mining activities on parcels within the Central Bay, Middle Ground Shoal, and area north of the federal navigation channels of the Western Delta as well as offloading of mined materials at several facilities around the Bay and Delta ("Project").

TRC Solutions Inc. was requested by Hanson Aggregates West Region to assist in a third-party review of the draft EIR with emphasis on the Air Quality section (Section 4.5). The draft EIR provides for a new 10 year lease period ending 2018. During this period the Project results in increases of air emissions due to renewal of current lease and increases in mining volume (1,245,318 yd^3 mining volume during base year 2007 increased to 2,040,000 yd^3 annually). Key assumptions and findings of the Air Quality section of the SLC Draft EIR assessment are summarized below.

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- Proposed mining volume will increase to an estimated 2,040,000 yd^3 per year from 2007 baseline of 1,245,318 yd^3 per year.
- A single mining event is approximately 2,000 yd^3 resulting in a net increase of 400 mining events per year from the baseline.

- Each mining event was assumed to occur over a 4 – 12 hour period and result in offloading emissions.
- BAAQMD threshold of significance in effect at the time of the NOP was 15 tons/year per criteria pollutant (i.e., NO_x, PM, ROG, CO) exclusive of CO_2. Any increase in GHG emissions (CO_2) above baseline would be considered significant.
- Only NO_x and CO_2 emissions associated with the Project in 2010 resulted in a finding of significance resulting in MM Air-1 and MM Air -2.
- Implementation of mitigation measures (MM) would reduce potential significant impacts to regional air quality and the Project's contribution to global warming to less than significant.

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Findings

1. Applicability of CEQA Guidelines

The SLC Draft EIR states (pg 4.5– 15 lines 15 – 17) that their assessment of significance relied on the BAAQMD policy that the specific significant thresholds published in the *CEQA Guidelines* at the time when a project NOP is published. The NOP for this project was published on July 10, 2007; therefore the SLC applied the BAAQMD's *CEQA Guidelines* (1999) for this impact analysis. SLC correctly assessed NO_x emissions and their impacts against the 15 ton/yr threshold that was identified in the 1999 *CEQA Guidelines* (Table 3), but then they deviated from the 1999 *CEQA Guidelines* for CO_2 in stating that any increase in GHG emissions above the baseline would have a significant impact on climate change. CO_2 emissions and climate change were not addressed in the 1999 *CEQA Guidelines*. The 2010 *CEQA Guidelines* established significance thresholds for greenhouse gases. Even though the BAAQMD 1999 CEQA Guidelines do not cover potential greenhouse gas emissions, the inclusion of GHG emissions in the impacts analysis is appropriate under CEQA.

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2. CO2 Emission Factor Accuracy

The SLC Draft EIR cites in Tables D3, D6, and D9 that the emission factors used to calculate CO_2 emission rates were derived from the CEQA distributed software; OFFROAD2007 and represent emission factors for diesel fueled engines. In Tables D3, D6, and D9 the Draft EIR lists **586.3 g/bhp-hr** as the CO_2 emission factor for the diesel powered sources. This value is in disagreement with the emission factor **568.3 g/bhp-hr** derived by TRC using OFFROAD2007 (see Appendix 1). The correction of this emission factor would yield approximately a 3.1% reduction in the Project's CO_2 emission rates. The Load Factors and Emission factors used for the remaining criteria pollutants were verified with the Draft EIR's cited source (Tables D3, D6, and D9): Appendix B – Emissions Estimation Methodology for Commercial Harbor Craft Operating in California.

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3. NOx Tier 2 Emission Factor Accuracy

A portion of the future NO_x emissions appears to be overestimated. The NO_x emission factor of 7.8 g/kW-hr used in the 2011 and 2018 emission rate calculation for engines upgraded to meet Tier II Emission standards is incorrect. The USEPA's definition of Tier II standards for Category 2 engines lists 7.8 g/kW-hr (5.8 g/bhp-hr) as the emission factor for NO_x + Hydrocarbons (ROGs) (See Appendix 2). The NO_x emission contribution can be estimated by subtracting the ROG portion of the factor. For example in 2011, after the Hanson TS & G Barge – Main Engine has been upgraded to meet Tier II standards the corrected NO_x emission factor would be: 10-54

$$NOx\ emission\ factor - ROG\ emission\ factor = 5.8\frac{g}{bhp \cdot hr} - 0.95\frac{g}{bhp \cdot h} = \mathbf{4.85}\frac{g}{bhp \cdot h}$$

In this case the adjusted emission factor would result in a **16.4% reduction** in NO_x emissions from the Hanson TS & G Barge – Main Engine after the upgrade to Tier II standards. The degree of reduction will vary engine to engine depending upon the ROG emission factor that was obtained from Appendix B. This adjustment will have a more significant impact upon the 2018 estimates when a majority of the engines have been upgraded. Overall the NOx emission inventory would be reduced in future years, 2011 and 2018.

4. Incomplete Greenhouse Gas assessment

Combustion by-product gases other than CO_2 (i.e., CH_4, N_2O) contribute to climate change. These GHG were not included in the SLC Draft EIR. CH_4 and N_2O are emitted in lesser quantities but have greater warming potential. Table 1 shows the CO_2 equivalent values for CH_4 and N_2O emissions. CO_2 equivalency is used to normalize the total GHG contribution. Accounting for CH_4 and N_2O would add approximately 0.6% to the CO_2 total. 10-55

Table 1.

Greenhouse Gas	Warming potential	Relative Emissions (g/g CO_2 emitted)	CO_2 equivalence
CO_2	1	1	1
CH_4	21	0.000138	0.002898
N_20	310	0.00000985	0.0030535

5. Footnote ([c]) in Tables D6 and D9

Footnote ([c]) in Tables D6 and D9 states that all Jerico engines would meet the USEPA Tier 2 NO_x standard of 5.8 g/bhp-hr by 2010. This footnote does not agree with the engine upgrade schedule in the Draft EIR and the NO_x emission factors listed for Jerico engines in Tables D6 and D9. Therefore, footnote ([c]) should be removed from Tables D6 and D9. 10-56

6. Jerico Dredge Barge Generator NO_x Emission Factor

According to Table 4.5-6. in the SLC Draft EIR, the Jerico Dredge Barge Generator is currently a Tier II engine. The emission factor is currently listed as 6.93 g/bhp-hr, which is not consistent with NO_x Tier II emissions standards. The emission factor should be 4.62 g/bhp-hr which is consistent with the Tier II NO_x emission standard cited in TRC's Comment 3 - *NO_x Tier 2 Emission Factor Accuracy.* 10-57

7. Table 4.5 – 1

The column titled "Standard" in Table 4.5 – 1 - *San Francisco Bay Area Air Basin Ambient Air Quality Summary (2006 – 2008)* is not properly formatted. The values listed in the Standard column do not correlate to the proper pollutant standards listed in the column labeled "Pollutant". 10-58

Appendix 1 – OFFROAD 2007 Data Set ↓10-59