

**Addendum to the Air Quality and Climate Change Impact Assessment
Carli Mine Expansion Project**

August 21, 2017

1.0 INTRODUCTION

This Addendum to the AQCCIA (Sespe, 6/23/2017) assesses effects of Project Description changes for the Carli Mine Expansion Project (Project) which consist of the following:

- Excavation of the existing pit (Phase E) will be concurrent with excavation of the Project site (Phase T).
- The Asphalt and Concrete Processing Plant (A&C Plant) will be located north of the Carli property within the current facility.
- End dates for both the excavation and A&C Plant operation would be extended from 10 years (both) to 13 years and 16 years, respectively.

Each of the above changes is assessed qualitatively to determine the potential effect of the each change on regional and local air quality conditions. Quantitative analysis is provided if qualitative analysis indicates an impact may increase from the level evaluated in the AQCCIA.

2.0 EXCAVATE PITS SIMULTANEOUSLY

The Project would continue mining at the rates analyzed in the previously approved *Final Environmental Impact Report – Sacramento Aggregates Expansion: Community Plan Amendment, Rezone, Use Permit and Reclamation Plan Amendment* (Sacramento County, 2008) herein referred to as the “2008 FEIR.” The amount of activity and equipment would remain unchanged and was assumed in the AQCCIA to be removed from Phase E when the Project starts.

2.1 Regional Impacts

The change in location of the sources would not change emissions levels and locations at which the sources may operate are within the same region. Thus, regional impacts would not change from those determined in the AQCCIA.

2.2 Local Impacts

The effect of excavating both pits at the same time would be an emissions reduction on the Project site because some sources would remain in Phase E. As consequence emissions occurring within Phase E would still be reduced as assumed in the AQCCIA. However, the amount of emissions reductions in Phase E would be less than analyzed in the AQCCIA. Thus, excavating both pits results in less impact on local air quality than the Project analyzed in the AQCCIA.

3.0 RELOCATE A&C PLANT

The Project would substitute material processed by the A&C Plant for materials that would be mined. Total production and haul truck trips would remain unchanged from the 2008 FEIR. The location of the A&C Plant within the Project site was previously undefined. The AQCCIA assessed emissions per ton produced from mining and the A&C Plant and determined that mining would result in greater emissions than the A&C Plant. On an hourly or daily basis, both mining and A&C processing could occur simultaneously and this condition was analyzed in the AQCCIA. On an annual basis, the Project was assessed as being exclusively mining.

3.1 Regional Impacts

Relocation of the A&C Plant to the existing plant area north of the Project-site would reduce emissions from those analyzed in the AQCCIA for the following reasons:

- A&C related truck travel would be less than analyzed in the AQCCIA which assumed trucks travel through the Triangle Rock facility and past the location now proposed to access the Project site.
- The A&C Plant would displace existing stockpiles at Triangle Rock whereas the Carli property was considered a greenfield site in the AQCCIA with no emissions being displaced by the Project.

The change in location of the sources would reduce emissions levels and both locations are within the same region. Thus, regional impacts would not change from those determined in the AQCCIA.

3.2 Local Impacts

Relocation of the A&C Plant to the existing plant area north of the Project-site would reduce local impacts as compared to those presented in the AQCCIA for the following reasons:

- Emissions would be less as discussed in Section 3.1.
- Increasing distance between the excavation activities and the A&C Plant would disperse emissions resulting in lower concentrations and health risk than determined in the AQCCIA.
- Locating the A&C Plant near the center of the properties occupied by Triangle Rock results in reduced impacts at the property boundaries and the maximum exposed individual receptor (MEIR). Because the A&C Plant location was undetermined, the AQCCIA conservatively assumed that the A&C Plant would be located adjacent to the MEIR. The proposed location is approximately a quarter mile farther from the MEIR than assumed in the AQCCIA and does not place the Plant significantly closer to any other receptor.

The change in location of the A&C Plant would reduce emissions levels and concentration at the MEIR. Thus, local impacts would be less than those determined in the AQCCIA.

4.0 EXTEND DURATION OF PROJECT

The Project analyzed in the AQCCIA assumed the excavation would be complete within 10 years and the A&C Plant activities would cease simultaneously with the depletion of the reserve. End date for the excavation would

be within 13 years from start though it may occur sooner depending on market demand and A&C Plant activity level. The A&C Plant would operate an additional six (6) years for a total of 16 years.

4.1 Regional Impacts

Extending the duration of the excavation would decrease emissions during some years by spreading the work and emissions associated with removal of the aggregates resources over a greater number of years resulting in lower impacts on average. However, the peak year may still achieve the production level and emissions assessed in the AQCCIA. Peak day emissions are more likely to remain unchanged from those assessed in the AQCCIA as compared to the peak year emissions because the maximum day and hour emissions are primarily governed by the size, type, and number of sources rather than by market demand. Thus, extending the Project duration would result in regional impacts less than or equal to those determined in the AQCCIA.

4.2 Local Impacts

As discussed in Section 4.1, Project emissions would remain the same and may be reduced by extending the Project duration. Thus, local impacts that do not accumulate over time would remain unchanged from the impacts determined in the AQCCIA. Cancer risk is the only measure of air quality impact under CEQA air quality regulation and guidance documents that accumulates over time. The AQCCIA assessed cancer risk for a fetus entering the third-trimester through age 10.

As discussed in Section 3.4.6 of the AQCCIA, the Office of Environmental Health Hazard Assessment (OEHHA) has determined that young animals are more affected by exposure to many carcinogens than adult animals. Therefore, OEHHA developed age sensitivity factors (ASF) to consider the increased effect of early-life exposure. In the absence of chemical-specific data, OEHHA recommends a default ASF of 10 for the third trimester to age 2 years, and an ASF of 3 for ages 2 through 15 years to account for potential increased sensitivity to carcinogens during childhood.

The ASF result in greater cancer risk potential early in the Project than later in the Project. Thus, completing the excavation after 10 years is associated with greater cancer risk than a longer Project having lower annual emissions. For instance, three (3) extra years of excavation would result in average annual emissions approximately 23% less than those evaluated in the AQCCIA (i.e., Years: (13-10)/13). However, ASF magnify the effect by multiplying the cancer risk by ten (10) or three (3) up to age 16. By reducing the proportion of emissions that occur before the third year, an extension of the Project duration reduces Project cancer risk.

As may be observed by review of AQCCIA Table 16, A&C Plant processed materials emit less than excavated materials on a per ton produced basis. Thus, A&C Plant emissions were omitted from the AQCCIA cancer risk assessment under the conservative assumption that all produced materials originate from the excavation. As discussed in the preceding paragraph, it is conservative to retain the 10-year (i.e., age -0.25 to 10) duration for the excavation. Under that assumption, the A&C Plant would operate post-excavation for up to six years (i.e., age 10 to 16).

Health risk assessment (HRA) was performed to predict the amount of cancer risk associated with adding six years of exposure considering the change in location of the A&C Plant. HRA methods and assumptions employed

for the AQCCIA were used to quantify the cancer risk at each receptor during year 10 to 16. The predicted cancer risk values are summed with values in the AQCCIA representing 10 years of excavation to determine the revised cancer risk estimate presented in Table 1 below.

Table 1 Excess Cancer Risk Per Million Individuals Exposed

Model Receptor Number – Type	Third Trimester to Age 10 (AQCCIA Table 27)	Age 10 to Age 16 ^a	Project Total (Sum)
1 – Residence	3.21	0.14	3.35
2 – Residence	-19.2 ^b	0.09	-19.1 ^b
3 – Residence	-112 ^b	0.11	-112 ^b
4 – Residence	-11.6 ^b	0.05	-11.6 ^b

^a Supporting dispersion and health risk assessment modeling files may be downloaded here:

<https://www.dropbox.com/sh/mw3aj6emjoctsmv/AADyA33YQkkoOBAHicBEwDY6a?dl=0>.

^b Negative values correspond to a reduction in pollutant concentrations and cancer risk resulting from the ending of activity within Phase E. As discussed in Section 3.0 above, simultaneous excavation in Phase E and Phase T (i.e., the Project site) would spread the emissions out resulting in less increase at Receptor 1 which is adjacent and downwind from the Project and less reduction at Residences 2, 3, and 4 than predicted in the AQCCIA. Residences 2, 3, and 4 are located crosswind and upwind from the Project but downwind from Phase E.

As shown in Table 1, adding six to the number of years considered in the AQCCIA has negligible effect on Project cancer risk. Factors contributing to this outcome include:

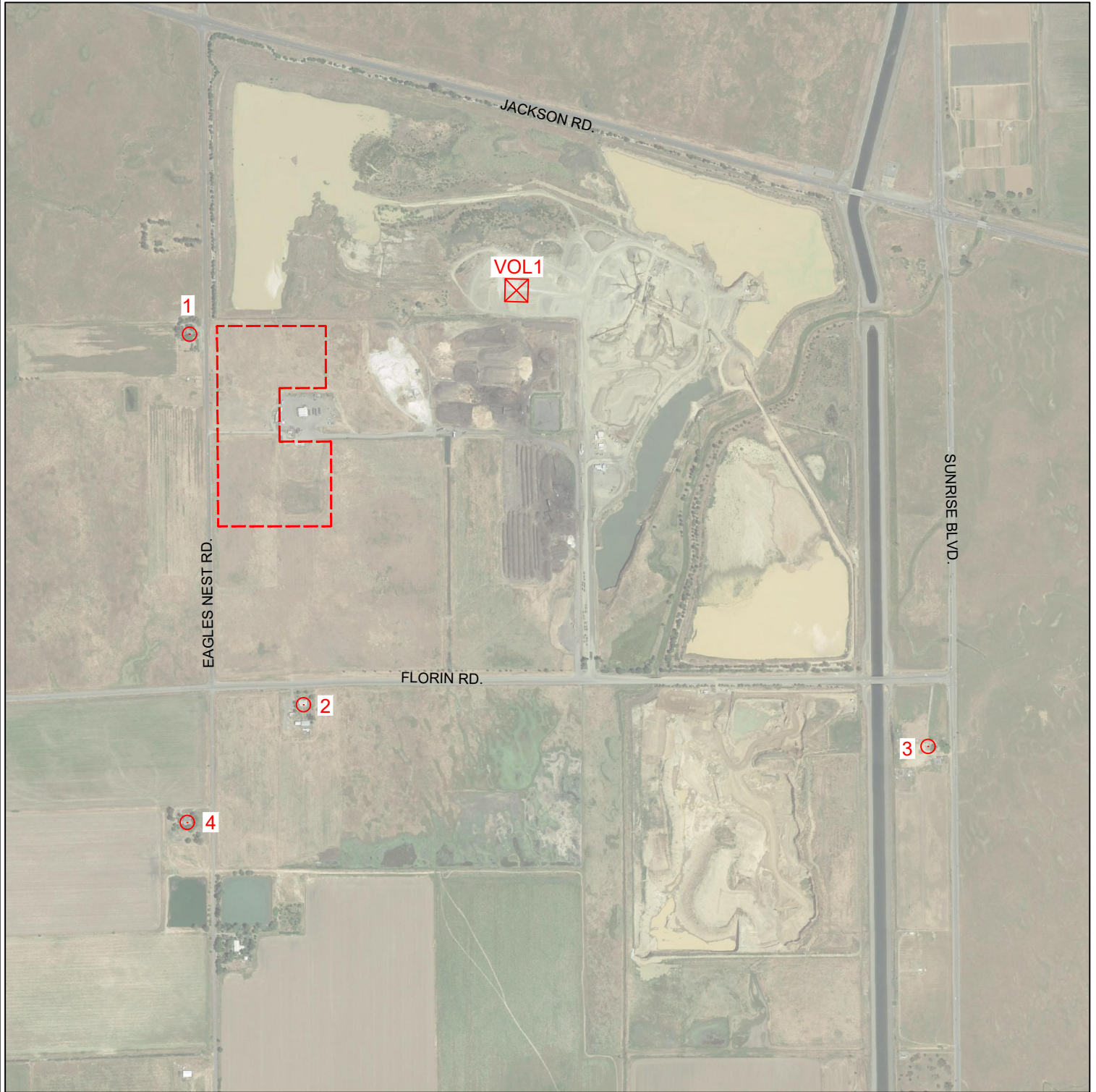
- Great distance of the A&C Plant away from receptors as compared to the excavation which is adjacent to the MEIR.
- Low annual production (i.e., 150,000 tons/yr) late in the Project as compared to the excavation (i.e., 1,965,600 tons/yr) which occurs early in the project and magnified by ASF.

5.0 CONCLUSION

Modifications to the Project analyzed in the AQCCIA are listed in Section 1.0 above. Each modification is assessed qualitatively in this Addendum to determine the potential for greater impacts to air quality as compared to those predicted in the AQCCIA. It was determined that cancer risk impact had potential to increase while impact on other aspects of air quality and human health would not change and several would be reduced from the impact levels predicted in the AQCCIA. Modeling conducted to quantify increase in cancer risk from changes in the Project shows that the increase is of a magnitude so low that it is within the rounding error. Thus, impacts described in the AQCCIA are representative of those that would reasonably be expected for the Project.

LEGEND

- LOCATION OF A&C PLANT ANALYZED IN THE AQCCIA.
- LOCATION OF RESIDENTIAL RECEPTOR REFERENCED BY THE IDENTIFICATION NUMBER SHOWN.
- ⊗ VOLUME SOURCE "VOL1" REPRESENTING ANOTHER LOCATION WHERE THE A&C PLANT MAY OPERATE.



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AIR PHOTOGRAPHY: GOOGLE MAY 2017



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SCALE: HORIZ. AS SHOWN
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DRAWN BY: G.CAMUS
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FIGURE NUMBER

1 OF 1