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To: Mr. Matthew Slowik, Senior Planner, San Bernardino County
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From: Mr. Matt Dunn, Principal Engineer, URS Corporation
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Subject: **Response to Comment on Air Quality Technical Memos (Criteria Pollutant Emissions from the Proposed Agincourt and Marathon Solar Projects, CUP Applications P201200011 and P201200012), regarding Blasting PM Emissions, San Bernardino County, California**

The construction activities for the proposed PV solar power projects in Lucerne Valley for Marathon Solar LLC and Agincourt Solar LLC will require the use of explosive blasting to make the proper trenching for underground power lines with the sites. This is due to the bed rock conditions at the sites. Each project may have to using explosive blasting for the entire linear length of the trenches to loosen the dirt. The trenching would occur over a 6 month interval (worst case assumption).

Review of the available literature from the Environmental Protection Agency's (EPA's) Compilation of Air Pollutant Emission Factors (commonly known as AP-42) shows there are not directly applicable particulate emissions factors for the use of overburden removal for trenching. Sections 11 and 13 of the Compilation have particulate emissions on a per blast basis, but not on an unit volume of the dirt disturbed or removed. The MDAQMD was contacted for supporting information on this procedure. The District provided *Emission Inventory Guidelines for Minerals Handling and Processing Industries (April 10, 2000)*. In this document, they provide dust entrainment PM emissions on per blast and per unit area shifted. Though the factors are aimed at mine shelf movement, URS has used these factors to estimate potential emissions from trench soil movement.

Section V.B of the Guideline provides the following equation:

E = Particulate matter emissions rate in pounds per year

k = Particulate matter size factor

$$E = k \times N \times 0.0005 \times A^{1.5}$$

N = Number of blasts per year

A = Horizontal area shifted by each blast in square feet

k (TSP)	=	1.00
k (PM ₁₀)	=	0.52
k (PM _{2.5})	=	0.52

This method requires information on the horizontal area shifted by blasting, and the number of such blasts performed during the year. This method cannot be used if blasting depth exceeds 70 feet. Based on this algorithm, we have assumed blasting would for 6 days a week for 6 months to move the bed rock and overburden material. The affected worst case trenching area for the Marathon project is 2.76 acres or 120,225 square feet. The worst case trenching area for the Agincourt area is 1.38 acres or 60,120 square feet. These parameters provide the results.

Marathon

$$E = 0.52 \times 6 \text{ blasts per week} \times 52 \text{ weeks} \times 6 \text{ months}/12 \text{ months} \times 0.0005 \times (120,225/(6*26))^{1.5}$$

$$E = 806 \text{ lbs PM}_{10}/\text{yr} \text{ or } 0.433 \text{ tons/year}$$

Agincourt

$$E = 0.52 \times 6 \text{ blasts per week} \times 52 \text{ weeks} \times 6 \text{ months}/12 \text{ months} \times 0.0005 \times (60,120/(6*26))^{1.5}$$

$$E = 307 \text{ lbs PM}_{10}/\text{yr} \text{ or } 0.153 \text{ tons/yr}$$

Emissions of other criteria pollutant (NO_x and CO) are much lower, but can not be quantified without specific knowledge of the explosive to be used.

REFERENCES

Mojave Desert Air Quality Management District Antelope Valley Air Pollution Control District Emissions Inventory Guidelines for Mineral Handling and Processing Industries. 2000. www.mdaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=401

United States Environmental Protection Agency, Compilation of Air Pollutant Emissions Factors, Vol. 1, <http://www.epa.gov/ttnchie1/ap42/>