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To,
Director (Non-Coal Mining)
IA Division
Ministry of Environment, Forest and Climate Change
Indira Paryavaran Bhawan, Jor Bagh
New Delhi-110003

Date: 14.11.2017

Subject: Reply of Additional details sought as per the statement uploaded on the portal of Ministry for Environment Clearance for Sand Minor Minerals at M.T. Karhera Block YNR/B-13 (Area-67.79 Ha.) Village- M.T. Karhera, Tehsil-Radaur, District-Yamuna Nagar, Haryana for the production capacity of 23.60 Lakh TPA By M/s Kawaljeet Singh Batra.

Dear Sir,

The point wise reply of the above mention subject is given below for your kind perusal and for grant of Environment Clearance

#	Additional details sought	Reply/ Document
1.	The concentration of PM 2.5 in worst case scenario and after mitigation measures is not submitted.	The concentration of PM 2.5 in worst case scenario and after mitigation measures is attached as Annexure-A .

We hope you would find the same in order your kind perusal as necessary action.

For, M/s Kawaljeet Singh Batra.

(Authorized Signatory)

Encl : As above.

1.0 AIR QUALITY MODELING FOR PM_{2.5} CONCENTRATION WITHOUT MITIGATION MEASURES

The predicted highest incremental concentration due to loading was found at A1 (located inside mining lease) viz. 0.10756 $\mu\text{g}/\text{m}^3$. The second highest incremental concentration was found at A2 (0.00124 $\mu\text{g}/\text{m}^3$) because maximum impact of loading activities will take place within 500m radius.

The predicted concentrations due to transportation were much higher than loading activities. The worst-case predicted maximum incremental concentration due to transportation was found at A1 (Project Site) viz. 2.668 $\mu\text{g}/\text{m}^3$. The second highest incremental concentration was found at A2 (falling at about 360 m distance from nearest transportation routes) viz. 1.856 $\mu\text{g}/\text{m}^3$. The incremental concentration at all other locations was significantly less due to large distances.

The predicted maximum cumulative GLC of PM_{2.5} was found to be 48.918 $\mu\text{g}/\text{m}^3$ at A4, which is due to local activity nearby village Pobari. The second highest predicted cumulative GLC of PM_{2.5} was found to be 48.075 $\mu\text{g}/\text{m}^3$ at A1 (Project site).

At both locations, the predicted cumulative concentrations are under the prescribed NAAQ standard for PM_{2.5} concentration (60 $\mu\text{g}/\text{m}^3$). However, these levels are predicted based on worst case scenario with no mitigation measures.

The predicted 24 hours GLCs at baseline air quality monitoring locations are presented in **Table 1** below.

Table1: Predicted GLC of PM_{2.5} at Ambient Air Quality Monitoring Stations (WORST CASE)

Location Code	Location Name	Max Baseline Conc. ($\mu\text{g}/\text{m}^3$)	Predicted GLC ($\mu\text{g}/\text{m}^3$) – Loading	Predicted GLC ($\mu\text{g}/\text{m}^3$) – Transportation	Cumulative GLC ($\mu\text{g}/\text{m}^3$)
A1	Project Site	45.3	0.10756	2.668	48.075
A2	500 m from Mine Site	45.1	0.00124	1.856	46.957
A3	Village Nachraun	46.3	0.00343	0.232	46.535
A4	Village Pobari	48.1	0.00628	0.812	48.918
A5	Village Barsan	45.3	0.00056	0.348	45.648
A6	Village SahbaMazra	45.2	0.00244	0.232	45.434

The predicted 24 hours GLCs at baseline air quality monitoring locations predicted under controlled conditions by application of mitigations measures are presented in **Table 2** below.

2.0 AIR QUALITY MODELING FOR PM_{2.5} CONCENTRATION WITH MITIGATION MEASURES

The predicted maximum cumulative GLC of PM_{2.5} was found to be 48.67 µg/m³ at A4, which is due to local activities nearby village Pobari. The second highest predicted cumulative GLC of PM_{2.5} was found to be 47.14 µg/m³ at A1 (Project site).

At both locations, the predicted cumulative concentrations are under the prescribed NAAQ standard for PM_{2.5} concentration (60 µg/m³). However, these levels are predicted based on worst case scenario with no mitigation measures.

**Table 2 – Predicted GLC of PM₁₀ at Ambient Air Quality Monitoring Stations
(WITH MITIGATION MEASURES)**

Location Code	Location Name	Max Baseline Conc. (µg/m ³)	Predicted GLC (µg/m ³) – Loading	Predicted GLC (µg/m ³) – Transportation	Cumulative GLC (µg/m ³)
A1	Project Site	45.3	0.10756	1.734	47.14
A2	500 m from Mine Site	45.1	0.00124	1.392	46.49
A3	Village Nachraun	46.3	0.00343	0.167	46.47
A4	Village Pobari	48.1	0.00628	0.568	48.67
A5	Village Barsan	45.3	0.00056	0.243	45.54
A6	Village Sahba Mazra	45.2	0.00244	0.150	45.352

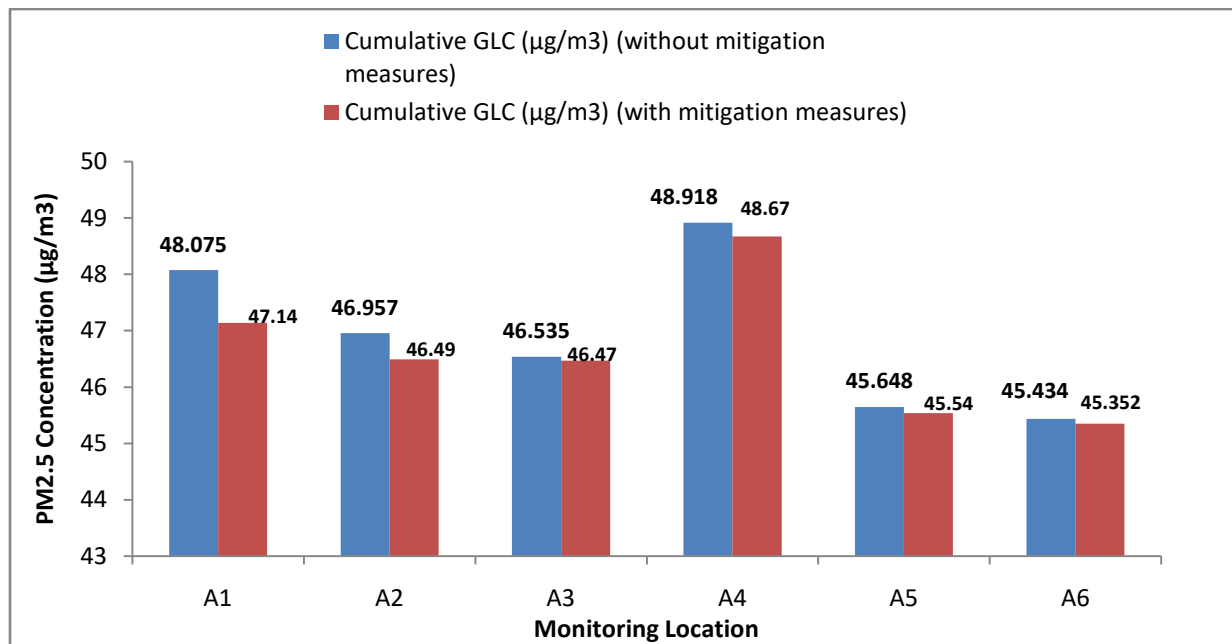


Figure-1: Comparative of Cumulative concentration of PM_{2.5} in (µg/m³) before and after mitigation measures

3.0 Conclusion

- The predicted concentrations from mining activities are insignificant; whereas transportation is the major source of dust emission.
- Under worst case conditions with no mitigation measure, the predicted cumulative concentrations at A4 (2.7 Km from Project site) and A1 (Mine Site) are exceeding the prescribed NAAQ standard for PM_{2.5} concentration (60 µg/m³).
- Under controlled conditions (with mitigation measures), all predicted cumulative concentrations are meeting the prescribed NAAQ standard for PM_{2.5} concentration (60 µg/m³).
- The predicted concentrations are due to proposed sand mine only and higher pollutant concentrations may be observed in the study area due to simultaneous operations of other mines / anthropogenic activities, data for which is not available.

4.0 Mitigation Measures

The proposed mining operations are anticipated have low impact on the ambient air quality. The following measures are suggested to mitigate any harmful impacts of pollutants -

- Planning multiple transportation routes in different direction to minimize the dust generation.
- Planning paved roads outside mine lease area to minimize the dust generation. Alternatively, planning transportation routes so as to reach the nearest paved roads by shortest route. (minimize transportation over unpaved road);
- Frequent water sprinkling on unpaved roads (>2L/m²)
- Plantation of trees along haul roads, especially near settlements, to help to reduce the impact of dust on the nearby villages;
- Dust mask shall be provided to the workers engaged at dust generation points like excavations and loading points;
- Transportation of material shall be carried out during day time only;
- The speed of trucks plying on the haul road should be limited to avoid generation of dust;
- Covering of material during transportation on trucks to prevent spillage of sand from the trucks. The trucks shall be covered by tarpaulin. Overloading shall be avoided.

IMPACTS OF AIR POLLUTION AND MITIGATION MEASURES

Attributes	Impact	Mitigation Measure	Budget/annum
Human	<u>WORST CASE without using Mitigation Measures</u> A predicted cumulative GLC of PM_{2.5} was 48.918 µg/m³ at proposed Mine site (WORST CASE) against the threshold limit of 60 µg/m³. <u>WORST CASE after Mitigation Measures</u> After implementation of suggested mitigation measures the Worst Case cumulative value would be 48.67 µg/m³ which is under threshold limit. Dust generation due to loading and unloading of mineral and due to transportation can also affect the workers as well as nearby villagers. The excess of Free silica content in the air may cause health related issues (Silicosis) in human being.	20 KLD water will be proposed for dust suppression at mine site and haul road (Mortable Connecting road) by sprinklers to avoid dust generation during mining activity and transportation. Personal Protective Equipments like Eye Goggles, Dust Mask, Leather gloves, safety Shoes & Boots will be provided to the workers engaged at dust generation points like excavation and loading points. Planning transportation routes of sand so as to reach the nearest paved roads by shortest route (minimize transportation over unpaved road). Alternatively, new haul road (5.3 Km) will be constructed by Project Proponent for transportation of excavated minerals from mine to nearest approach road. The speed of trucks plying on the haul road will be limited to avoid generation of dust and covering of material during transportation on trucks to prevent sand leak from the trucks. The trucks will be covered by	Rs. 4.0 Lakhs under Dust Suppression Rs. 10.00 Lakhs under OH&S. 25.00 Lakhs (@ 5.00 Lakhs /KM) proposed for the Construction of haul road (5.3 KM) and 5.00 Lakhs/annum (in EMP budget) will be used for regular maintenance. Other fund for this activity will be utilized from 'Mines and Mineral Development, Restoration and Rehabilitation fund' i.e. *Rs. 35.25 Lakhs per year.

Annexure-A

Animal	Grassing land will be reduced.	tarpaulin. Overloading will be avoided.	Rs. 9.00 Lakhs per year (Plantation)
Plant	Stomatal index may be minimized due to dust deposit on leaf.	It is proposed to plant 4928 Nos. of local species per year with consultation of Forest department with some fruit bearing and medicinal trees, along the haul roads to prevent the impact of dust in the nearby village. Periodic Heath Check-up Camp will be organize by Project Proponent for Mine workers.	
Crops	Crop yield will be reduced.	Medical control measures will be taken for the miners with a view to protect their health. The medical officer will visit the mine site once in a month and shall undertake the following need based functions.	Rs. 3.00 Lakhs per year (under OH&S Budget)