



Ref. No. A/ 422 /2022-23

Dated—09.12.2022
(By e-mail)

To

The Director,
Ministry of Environment, Forests & Climate Change
3rd Floor, Vayu Wing, Indira Paryavaran Bhavan
Jor Bagh Road, New Delhi - 110 003
INDIA (diriapolicy-moefcc@gov.in; s.kerketta66@gov.in)

Sub: Submission of half-yearly EC compliance status for the period April-2022 to September-2022 in respect of 1 MTPA Iron Ore Pelletization Plant at Village-Basantapur, Tehsil-Jhumpura, District-Keonjhar of Essel Mining & Industries Limited.

Ref: 1. Environment Clearance (EC) Vide letter F. No. J-11011/424/2011-IA-11 (I) dated 17.03.2022.
2. S.O. 5845(E), dated the 26th November, 2018

Sir,

With reference to the letters and on the subject cited above, we are submitting herewith the half-yearly EC compliance status along with environmental monitoring report and other relevant documents in respect of 1 MTPA Iron Ore Pelletization Plant at Village-Basantapur, Tehsil-Jhumpura, District-Keonjhar for the period of April-2022 to September-2022.

This is for favour of your kind perusal.

Thanking you,

Yours Faithfully,
For ESSEL MINING & INDUSTRIES LTD.

Sh. Ravindra Ku Sahu
Vice President & Plant Head

Encl: As above.

Cc: 1. Ministry of Env., Forest and Climate Change, Eastern Regional Office, Bhubaneswar, e-mail: roez.bsr-mef@nic.in
2. The Member Secretary, State Pollution Control Board, Odisha. e-mail: membersecretary@ospcb.org
3. Regional Director, Central Pollution Control Board, Kolkata. Industries Ltd

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HALF YEARLY COMPLIANCE REPORT OF ENVIRONMENTAL CLEARANCE CONDITIONS

Name of the Project: Compliances to the conditions of the Environmental Clearance for the proposed upward integration of existing Beneficiation Plant with additional 1 MTPA Iron Ore Pelletization Plant within existing Beneficiation Plant premises at Village – Basantpur, Sub-division – Champua, Tehsil- Jhumpura, District – Keonjhar, Odisha of Essel Mining & Ind. Ltd.

EC Approval Letter: F. No. J-11011/424/2011-IA-II (I) on dated 18.04.20129 (Original), F. No. J-11011/424/2011-IA-11 (I) on dated 17.03.2022 (Transfer of EC in favour of EMIL)

Period of Compliance Report: April-2022 to September-2022

Sl. No.	Conditions	Compliance
Specific conditions		
(i)	Compliance to all the specific and general conditions stipulated for the existing plant by the Central/ State Government should be ensured and regular reports submitted to the Ministry and its Regional Office at Bhubaneswar.	<p>The conditions stipulated in the environmental clearance order accorded by MoEF & CC as well as the consent to establish & consent to operate granted by SPCB, Odisha in respect of 1.0 MTPA Iron Ore Pellet Plant are being complied. The compliance status reports for the same are being submitted to the respective authorities.</p> <p>Consent to Establish (NOC) obtained from OSPCB vide letter no- 20851/Ind-11-NOC-5445 dated on 01.10.2012 and renewal of Consent to Operate obtained from OSPCB vide letter no-5737/IND-I-CON-6407 dated on 05.04.2022.</p>
(ii)	Efforts shall be made to reduce particular emissions in the ambient air and a time bound action plan should be submitted. Continuous stack monitoring facilities for the stacks should be provided and sufficient air pollution control devices Viz., Electrostatic Precipitator (ESP), bag house, bag filters etc. should be provided to keep the emission levels below 50 mg/ Nm ³ and installing energy efficient technology. No charcoal should be used as raw material.	<p>All mitigation and control measures are being taken to reduce particular emissions in the construction and operation phase. Fixed water sprinklers have been installed along the haulage roads. Also, 4 nos. of mobile water tankers have been deployed for water sprinkling activity. The haulage roads are being made cement concrete.</p> <p>Adequate pollution control measures with proper management procedures are adopted. The required pollution controls infrastructures (Viz: Electrostatic Precipitator (ESP), bag house, bag filters, Water Sprinklers etc.) for the 1.0 MTPA Pellet Plant are operated efficiently. No Charcoal is used as raw material in the process.</p>

Sl. No.	Conditions	Compliance
		The details of air pollution control measures for the Pellet Plant during operation phase are given in Annexure-A .
(iii)	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R.No.826(E) dated 16th November, 2009 should be followed.	Ambient Air Quality (AAQ) monitoring is being carried out at 4 locations covering core and buffer zone. The AAQ confirms to the National Ambient Air Quality Emission Standards (NAAQ).
(iv)	Gaseous emission levels including secondary fugitive emissions from all the sources should be controlled within the latest permissible limits issued by the CPCB should be followed. New Standards for the sponge iron plant issued by the Ministry vide G.S.R.414 (E) dated 30th May 2008 should be followed.	The gaseous emissions including secondary fugitive emissions have been kept under permissible limits as stipulated by CPCB.
(v)	Vehicular pollution due to transportation of raw material and finished product should be controlled. Proper arrangements should also be made to control dust emissions during loading and unloading of the raw material and finished product.	<p>During transportation of raw material and finished product, proper care is being taken to avoid unwanted spillage of material on roads. Steps are taken to transport the material by covering the vehicle with tarpaulin sheet to avoid fugitive dust emission. Vehicles having valid pollution certificate are deployed for the transportation work.</p> <p>Moreover, the internal roads of the plant are being made Cement Concrete. Also fixed sprinkler has been installed alongside the haulage road of the plant to avoid emission of dust during transportation. Further, care is being taken to ensure that road ways and vehicle wheels are kept clean during transportation.</p> <p>During loading and unloading of raw materials/finished products, proper care is being taken to avoid dropping of the materials from height and the material is moistened by sprinkling water. The raw material & finished product handling area is provided with fixed sprinkling system to effectively suppress the dust.</p>
(vi)	Prior Permission for the drawl of 75 m ³ /day water from River Baitarani from the concerned department should be obtained. Efforts shall be made to make use of rain water harvested. If needed,	Drawal of 746 m ³ /day water from river Baitarani for meeting the requirement of Iron Ore Beneficiation Plant & pellet has been allocated by the Water Allocation Committee and Chief-Engineer in charge DoWR, govt. of Odisha

Sl. No.	Conditions	Compliance
	capacity of the reservoir shall be enhanced to meet the maximum water requirement. Only balance water requirement should be met from other sources.	To meet the water requirement during the lean season, one reservoir having total holding capacity of 212250 m ³ has been constructed to store the rain / surface run-off water. The Surface runoff water of the plant area during rain is being stored in these reservoirs for meeting the water requirement.
(vii)	Regular monitoring of influent and effluent surface, sub-surface and ground water should be ensured and treated wastewater should meet the norms prescribed by the State Pollution Control Board or described under the Environment (Protection) Act, 1986 whichever are more stringent. Leachate study for the effluent generated and analysis should also be regularly carried out and report submitted to the Ministry's Regional Office at Bhubaneswar, SPCB and CPCB.	<p>Ground water sample is being collected from the nearby village, inside the plant premises and will be tested to ensure the pollutants concentration remaining within the norms prescribed by OSPCB/CPCB.</p> <p>There is no generation of wastewater from pellet process as water will be consumed in raw material grinding, mixing and green ball formation.</p> <p>The pellet plant area is properly levelled. During rain, the storm water of the area flows with the natural slope and mix with the storm water drain connecting to Garland drain around the plant premises. Garland drain has been connected to settling tank to arrest suspended solids then clean water is being sent to Rain water harvesting Reservoir for further use.</p> <p>Moreover, the plant (i.e.; both existing Beneficiation Plant and Pellet Plant) is designed with Zero discharge concept. The process generated water is being recycled and reuse within the Plant after proper treatment. No water is being discharged outside the plant premises.</p>
(viii)	'Zero' effluent discharge shall be strictly followed and no wastewater should be discharged outside the plant premises.	No wastewater is generated from the process as water is fully consumed in raw material grinding, mixing and green ball formation during pellet making. Thus there is zero effluent discharge beyond the plant premises.
(ix)	Proper handling, storage, utilization and disposal of all the solid waste should be ensured and regular report regarding toxic metal content in the waste material and its composition, end use of solid/hazardous waste should be submitted to the Ministry's Regional	<p>Solid Waste: No Solid waste generated from the process. The iron ore rejects and dust collected (containing Iron) are re-utilized in the pellet manufacturing. Broken Pellets are recycled through grinding plant. The STP sludge will be used as manure.</p> <p>Hazardous Waste: All the oily waste collected shall be properly stored under sheds and subsequently disposed</p>

Sl. No.	Conditions	Compliance
	Office at Bhubaneswar, SPCB and CPCB	<p>as per the provisions of the Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2016 and amendments thereafter. Lubricating waste oil is collected from the site properly and stored separately in sealed drums and is handed over to authorized agencies for reprocessing.</p> <p>Hazardous waste return in the prescribed format (Form-IV) is being submitted to OSPCB and MoEF, Regional Office, Bhubaneswar, Odisha.</p>
(x)	A Disaster Management plan should be prepared and a copy submitted to the Ministry's Regional Office at Bhubaneswar, OSPCB and CPCB within 3 months of issue of environmental clearance letter	<p>Keonjhar district lies in the Seismic Zone II (i.e. low damage risk zone) as per seismic zoning map prepared by BIS. For over the years, there is no occurrence of earthquake in Keonjhar District. So the chance of earthquake in the project site is ruled out.</p> <p>Maximum HFL (i.e. High Flood Level) of Baitarani near Plant site: 481m AMSL Minimum elevation of the site: 492m AMSL. So the project site is in safe height from the High flood level of the river.</p> <p>Since the project area comprises of almost plane area with slight undulation, Possibility of land slide is not anticipated. No Disaster Management Plan is required as of now.</p>
(xi)	All the recommendation made in the Chapter on Corporate Responsibility for Environmental Protection (CREP) for the Steel plants should be implemented.	The Corporate Responsibility is being implemented as per requirement.
(xii)	Green belt shall be developed in at least 33% of plant area as per the CPCB guide lines in consultation with the DFO.	Total project area of our integrated plant is at present 79.77 Acre. So 33% of total area which is 26.32-acre area needs to be covered as green belt area which has already been complied. The major plantation area is all along the boundary of the plant premise.
(xiii)	At least 5% of the total cost of the project should be earmarked towards the Enterprise Social Commitment based on locals need and item-wise details along with time bound action plan should be prepared and submitted to the Ministry's Regional Office at Bhubaneswar. Implementation of	<p>EMIL is committed to spend 5% of total project cost towards CSR i.e. 13.5 Crores.</p> <p>The item wise CSR activities detail with year wise distribution of the amount to be spent are detailed in Annexure-B.</p> <p>Details of initiative towards CSR activities taken up by the proponent are given in Annexure - B.</p>

Sl. No.	Conditions	Compliance
	such program should be ensured accordingly in a time bound manner.	
(xiv)	The company shall provide housing for construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Local workers are coming from their own house from nearby villages. However, infrastructure facilities such as temporary housing/shelter room, toilets, fuel for cooking, drinking water, healthcare facility etc. have been provided for the outside workers during the construction as well as operation phase.
General Conditions		
(i)	The project authorities must strictly adhere to the stipulations made by the Orissa State Pollution Control Board and the state government.	The conditions mentioned in the Consent to Establish and Consent to Operate issued from Odisha State Pollution Control Board is being followed regularly.
(ii)	No further expansion or modifications in the plant shall be carried out without prior approval of Ministry of Environment & Forests.	Any expansion or modifications in the plant shall be carried out without prior approval of MoEF&CC.
(iii)	The gaseous emissions from various process units shall conform to the load/ mass based standard notified by this Ministry on 19th May 1993 and standards prescribed from time to time. The state Board may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location.	The gaseous emissions from various process units conform to the prescribed standard as is evident from the attached monitoring report.
(iv)	At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of PM10, SO ₂ and NO _x are anticipated in consultation with SPCB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the SPCB/ CPCB once in six months.	Ambient Air Quality (AAQ) monitoring has been carried out in 4 locations in the core as well as buffer zone in consultation with regional office of OSPCB. Considering the predominant wind direction one AAQ monitoring station has been established within 500 m of the project site (i.e. in Nediguth Village situated nearby). AAQ monitoring data is being submitted to MoEF Regional Office, Bhubaneswar and OSPCB/CPCB in regular interval of time as prescribed. Environmental monitoring report is given in Annexure-A .

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(v)	Industrial waste water shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 € dated 19h May 1993 and 31st December 1993 or as amended from time to time. The treated waste water shall be utilized for plantation purpose.	There is no wastewater generation from the process as the water is completely utilized in the process. Total water is consumed in raw material grinding, mixing and green ball formation. The plant is designed with zero discharge concepts with recycle & reuse of the waste water generated during the process.
(vi)	The overall noise levels in and around the plant area shall be kept well within the standards (86 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz., 75 dBA (daytime) and 70 dBA (night time).	Adequate noise prevention measures are being taken at all noise generating sources to limit the noise level well within prescribed standard of MoEF&CC /CPCB. All the plant machineries have been designed as per industrial specification to control the noise level within the limit. The noise monitoring report is given in Annexure-A .
(vii)	Occupational health surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	Pre-employment medical check-up and regular health check-up in regular interval for all the employees and workers are being carried out & records are being maintained following the Factories Act.
(viii)	The company shall develop surface water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.	One reservoir having holding capacity of 212250 m ³ have been constructed. The rain water and surface runoff water of the plant area during rainy season is collected here for lean season use. The reservoir so constructed serves the dual purpose of storage and ground water recharge.
(ix)	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.	All environmental protection measures recommended in the EIA/EMP report are being strictly adhered to for the socio-economic development of the locality covering community development, education, drinking water supply, health care, communication etc. Details of initiative towards CSR activities has been taken up by the proponent are given in Annexure - B .
(x)	Requisite amount shall be earmarked towards capital cost and recurring cost/annum for environment pollution control measures to implement the	An amount of 13.5 Crores is allocated as capital cost and 2.7 Crores is allocated as recurring cost towards implementation of the conditions stipulated by the Ministry of Environment and Forests and the State Government.

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	<p>conditions stipulated by the Ministry of Environment and Forests as well as the State Government. An implementation schedule for implementing all the conditions stipulated herein shall be submitted to the Regional Office of the Ministry at Bhubaneswar. The funds so provided shall not be diverted for any other purpose.</p>	<ol style="list-style-type: none"> 1. Which includes necessary infrastructures required to control air pollution, water pollution, noise pollution. 2. Implement all the pollution control measures mentioned in Environmental Clearance and OSPCB Consent Order. 3. Monitoring is carried out to ensure the pollution level within the prescribed limit of MoEF&CC and OSPCB/CPCB.
(xi)	<p>A copy of clearance letter shall be sent by the proponent to the concerned Panchayat, Zila Parishad/ Municipal corporation, Urban Local Body and the local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the company by the proponent.</p>	<p>Advertisement has been given in the local newspapers (both in English and Oriya) regarding grant of environment clearance.</p>
(xii)	<p>The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MoEF at BBSR. The respective Zonal office of CPCB and the SPCB. The criteria pollutant levels namely; PM₁₀, SO₂, NO_x (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.</p>	<p>The updated status of compliance of the environmental clearance conditions, including results of monitored data are being uploaded in our company's website.</p> <p>The compliance report is being submitted to the MoEF Office, Bhubaneswar and MoEF, Delhi, Zonal Office of CPCB, Kolkata and SPCB, Odisha in regular interval.</p> <p>The AAQ monitoring is being carried out in 4 locations within the core and buffer zone. A LED type electronic display Board has been installed at the main gate of the plant for displaying monitoring data</p>
(xiii)	<p>The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard Copies as well as by email) to the Regional Office of this Ministry at Bhubaneswar/ CPCB/</p>	<p>The six monthly compliance report to the conditions mentioned in the Environment Clearance order with results of monitoring data is being submitted in due interval of time to MoEF Office at Delhi and Regional Office at Bhubaneswar, CPCB Zonal Office, Kolkata and SPCB, Odisha.</p>

Sl. No.	Conditions	Compliance
	SPCB shall monitor the stipulated conditions.	
(xiv)	The environment statement for each financial year ending at 31 st March in Form-V as it mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment Protection) Rule, 1986 as amended subsequently shall also be put in the website of the company along with the status of the compliance of the environment conditions and shall also be sent to the respective regional office of MoEF, Bhubaneswar by email.	Environment Statement Report (Form-V prescribed under Environment (Protection) Rules, 1986) is being submitted to the State Pollution Control Board by 30 th September every year for the previous financial year. It is also being submitted to the regional office, Bhubaneswar by email.
(xv)	The project proponent shall inform to the public that the project has been accorded environmental clearance by the ministry and the copies of the clearance letter are available with the SPCB and may also be seen in the web site of the Ministry of Environment and Forests at http://envfor.nic.in . This shall be advertised within seven days from the date of issue clearance letter, at least in two local newspaper that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and the copy of the same should be forwarded to the Regional Office at Bhubaneswar.	Advertisement was given in the local newspapers (both English and Oriya) regarding grant of Clearance within 7 days from the date of issuance of Environmental Clearance. A copy of the said Environmental Clearance was also sent to the MoEF, Regional Office, Bhubaneswar.
(xvi)	The project authority shall inform to the Regional Officer as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and date of commencing the land development work.	The Consent to Establish from State Pollution Control Board, Bhubaneswar has been obtained on 1 st October 2012 and the construction activities commenced following such CTE order. The commercial production started on obtaining the consent to operate order from OSPCB.



Sh. Ravindra Ku Sahu
Vice President & Plant Head

***Monthly Report On
Environmental Monitoring Data
for the Month of April - 2022***

For

M/S ESSEL MINING & INDUSTRIES LTD.

P.O. Basantpur, Tahasil- Jhumpura,

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Prepared By:

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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

CONTENTS

Sl. No.	Description	Pages
01	Location & Weekly Monitoring Schedule	01
02	Summary Sheet of Sampling (Ambient Air)	02
03	Ambient Air Monitoring Data	03
04	Noise Level Monitoring Data	09
05	Summary Sheet of Sampling (Water)	10
06	Surface water Analysis Report	11

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Weekly Ambient Air Monitoring Data Generated For the Month of April– 2022

LOCATION AND WEEKLY MONITORING SCHEDULE (FOR APRIL- 2022)

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Filter Cake Storage Yard		√				√	
Near Crushing Plant		√				√	
Near Raw Material Stack Yard		√				√	
Nediguth Village		√				√	

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

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House no 162-C, BDA HIG Duplex Colony, Baramunda
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Summary Sheet of Sampling (AAQ):

SI No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Filter cake storage yard	01.04.2022	OCPL/ AAQ/EMIL/01/04/22
2.	Sample 02	Near Crushing Plant	01.04.2022	OCPL/ AAQ/EMIL/02/04/22
3.	Sample 03	Near Raw Material Stack Yard	01.04.2022	OCPL/ AAQ/EMIL/03/04/22
4.	Sample 04	Nedigutha Village	05.04.2022	OCPL/ AAQ/EMIL/04/04/22
5.	Sample 05	Near Filter cake storage yard	04.04.2022	OCPL/ AAQ/EMIL/05/04/22
6.	Sample 06	Near Crushing Plant	04.04.2022	OCPL/ AAQ/EMIL/06/04/22
7.	Sample 07	Near Raw Material Stack Yard	04.04.2022	OCPL/ AAQ/EMIL/07/04/22
8.	Sample 08	Nedigutha Village	12.04.2022	OCPL/ AAQ/EMIL/08/04/22
9.	Sample 09	Near Filter cake storage yard	08.04.2022	OCPL/ AAQ/EMIL/09/04/22
10.	Sample 10	Near Crushing Plant	08.04.2022	OCPL/ AAQ/EMIL/10/04/22
11.	Sample 11	Near Raw Material Stack Yard	08.04.2022	OCPL/ AAQ/EMIL/11/04/22
12.	Sample 12	Nedigutha Village	19.04.2022	OCPL/ AAQ/EMIL/12/04/22
13.	Sample 13	Near Filter cake storage yard	11.04.2022	OCPL/ AAQ/EMIL/13/04/22
14.	Sample 14	Near Crushing Plant	11.04.2022	OCPL/ AAQ/EMIL/14/04/22
15.	Sample 15	Near Raw Material Stack Yard	11.04.2022	OCPL/ AAQ/EMIL/15/04/22
16.	Sample 16	Nedigutha Village	23.04.2022	OCPL/ AAQ/EMIL/16/04/22
17.	Sample 17	Near Filter cake storage yard	15.04.2022	OCPL/ AAQ/EMIL/17/04/22
18.	Sample 18	Near Crushing Plant	15.04.2022	OCPL/ AAQ/EMIL/18/04/22
19.	Sample 19	Near Raw Material Stack Yard	15.04.2022	OCPL/ AAQ/EMIL/19/04/22
20.	Sample 20	Nedigutha Village	26.04.2022	OCPL/ AAQ/EMIL/20/04/22
21.	Sample 21	Near Filter cake storage yard	18.04.2022	OCPL/ AAQ/EMIL/21/04/22
22.	Sample 22	Near Crushing Plant	18.04.2022	OCPL/ AAQ/EMIL/22/04/22
23.	Sample 23	Near Raw Material Stack Yard	18.04.2022	OCPL/ AAQ/EMIL/23/04/22
24.	Sample 24	Near Filter cake storage yard	22.04.2022	OCPL/ AAQ/EMIL/24/04/22
25.	Sample 25	Near Crushing Plant	22.04.2022	OCPL/ AAQ/EMIL/25/04/22
26.	Sample 26	Near Raw Material Stack Yard	22.04.2022	OCPL/ AAQ/EMIL/26/04/22
27.	Sample 27	Near Filter cake storage yard	25.04.2022	OCPL/ AAQ/EMIL/27/04/22
28.	Sample 28	Near Crushing Plant	25.04.2022	OCPL/ AAQ/EMIL/28/04/22
29.	Sample 29	Near Raw Material Stack Yard	25.04.2022	OCPL/ AAQ/EMIL/29/04/22
30.	Sample 30	Near Filter cake storage yard	29.04.2022	OCPL/ AAQ/EMIL/30/04/22
31.	Sample 31	Near Crushing Plant	29.04.2022	OCPL/ AAQ/EMIL/31/04/22
32.	Sample 32	Near Raw Material Stack Yard	29.04.2022	OCPL/ AAQ/EMIL/32/04/22

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House no 162-C, BDA HIG Duplex Colony, Baramunda
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AMBIENT AIR MONITORING AS PER NAAQ STANDARDS FOR THE MONTH OF APRIL-2022

LOCATION: Near Filter Cake Storage Yard

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									
		01.04.22	04.04.22	08.04.22	11.04.22	15.04.22	18.04.22	22.04.22	25.04.22	29.04.22	Avg
PM ₁₀	100	88.6	90	90.2	88.9	92.4	89	91.2	88.6	92	90.1
PM _{2.5}	60	58	60	59	59.6	54	60	59.8	58	51.8	50.13
Sulphur Dioxide (SO ₂)	80	38.6	38.2	39	40.2	42	38.6	39	38.4	40.4	39.37
Oxide of Nitrogen (NO ₂)	80	32	29.4	30.5	28.3	34.5	32	30.6	29	32.6	30.98
Lead (Pb)	1	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	184	180.5	178	181.4	185	179	178.4	177	183.5	180.7
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	38.2	38.5	39	41.4	37	38.8	40	41.5	41	39.48
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND								
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, &CO has been done as per the IS Code IS: 5182 Part IV,
II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das

Tested By: OCP

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Bhubaneswar, Odisha

AMBIENT AIR MONITORING AS PER NAAQ STANDARDS

FOR THE MONTH OF APRIL-2022

LOCATION: Near Crushing Plant

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									
		01.04.22	04.04.22	08.04.22	11.04.22	15.04.22	18.04.22	22.04.22	25.04.22	29.04.22	Avg
PM ₁₀	100	89.2	88.8	89.8	91	89	88.4	89.5	92	92.2	89.98
PM _{2.5}	60	57.4	59	58.8	58.2	57	56.8	57.6	60	57.4	58.02
Sulphur Dioxide (SO ₂)	80	28.8	28	28.4	27.6	27.2	29	28.8	30.2	29.6	28.62
Oxide of Nitrogen (NO ₂)	80	28.8	28.6	29.7	28.4	29	27.4	27.8	31	29.6	28.92
Lead (Pb)	1.0	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	168.8	171.6	171.4	171	170	169.2	171.8	172.2	169.6	170.62
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	39.2	38	38.8	37.4	39.8	38.4	41.4	42.8	41	39.64
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP)	01	ND	ND								
Particulate phase only(ng/m ³)											
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com

ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

AMBIENT AIR MONITORING AS PER NAAQ STANDARDS

FOR THE MONTH OF APRIL-2022

LOCATION: *Near Raw Material Stack Yard*

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									
		01.04.22	04.04.22	08.04.22	11.04.22	15.04.22	18.04.22	22.04.22	25.04.22	29.04.22	Avg
PM ₁₀	100	87.6	88.8	88.4	89.4	88.4	90.2	88	91.2	89.2	89.02
PM _{2.5}	60	58.5	59.2	60	59	51.4	60	59.6	59.5	58.2	60
Sulphur Dioxide (SO ₂)	80	28.6	29	28.6	30	30.2	31.8	32.8	31.6	30.2	30.31
Oxide of Nitrogen (NO ₂)	80	29.2	32	31.4	30.4	29	30.8	32.5	29	30	30.47
Lead (Pb)	1.0	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	179.2	176	178.4	178.2	178.8	177.8	179.6	178	177.5	178.1
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	42.2	40	40.6	41.9	39.6	40	43.4	41.5	42	41.24
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP)	01	ND	ND								
Particulate phase only(ng/m ³)											
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5082 Part IV, II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com | 

ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

AMBIENT AIR MONITORING AS PER NAAQ STANDARDS FOR THE MONTH OF APRIL- 2022

LOCATION: Nedigutha Village

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	Date- 05.04.2022	Date- 12.04.2022	Date- 19.04.2022	Date- 23.04.2022	Date- 26.04.2022	Avg.
PM ₁₀	100	56	55.2	46.4	57.5	55.4	54.1
PM _{2.5}	60	48.5	47	47.2	48	49.9	48.12
Sulphur Dioxide (SO ₂)	80	19.8	22	21.2	19.4	22	20.88
Oxide of Nitrogen (NO ₂)	80	18	22.4	20	21.8	22.2	20.88
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO) (8 Hrs)	2000	144.5	139.8	145.2	147.6	144	144.22
Ozone(O ₃)	180	ND	ND	ND	ND	ND	ND
Ammonia(NH ₃)	400	14.4	12.5	16	15.8	14.6	14.66
Benzene(C ₆ H ₆)	05	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m ³)	06	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m ³)	20	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS- 5182

Part IV, II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com |

ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

NOISE LEVEL MONITORING RESULT IN dBA

Date of Monitoring: 09.04.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	55	61	59.2	52	40.3
2	First-Aid Room	31	48.5	52.5	45.2	31
3	Security Office	33.4	40.6	54	41.5	29.7
4	Administrative building	29	38.2	31.4	35	23.2
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



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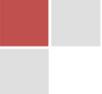
ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

REPORT ON SURFACE WATER ANALYSIS FOR THE MONTH OF APRIL - 2022

Summary Sheet of Sampling (Water):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	JARPADA	06- Apr -2022	OCPL/SW/01/04/22
2.	Sample 02	NANDIGUTU	06- Apr -2022	OCPL/SW/02/04/22
3.	Sample 03	RESERVOUR POND INSIDE PLANT	06- Apr -2022	OCPL/SW/03/04/22
4.	Sample 04	DALKI NALA NEAR PLANT	06- Apr -2022	OCPL/SW/04/04/22
5.	Sample 05	NAIBHANGA	06- Apr -2022	OCPL/SW/05/04/22

Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com | 

ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/01/04/22		Report No.- OCPL/EMIL/01/04/22	
Name & Address of Client	M/S ESSEL MINING & INDUSTRIES LTD. P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	JARPADA	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	06- Apr -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	07- Apr -2022
Sample type	Surface Water	Date of Analysis	07- Apr -2022
Required parameters	As described in W/O	Date of Issue of report	12- Apr -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	25.2
4	pH	-	6.8
5	Total Suspended Solids	mg/L	35
6	Total Dissolved Solid	mg/L	598
7	Biochemical Oxygen Demand at 27°C	mg/L	6.2
8	Chemical Oxygen Demand	mg/L	2.4
9	Total Residual Chlorine	mg/L	1.98
10	Alkalinity	mg/L	106
11	Calcium	mg/L	44.9

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

12	Magnesium	mg/L	27
13	Total Hardness as CaCO ₃	mg/L	57
14	Electrical Conductivity	μs/cm	103.8
15	Turbidity	NTU	6.6
16	Arsenic as As	μg/L	0.21
17	Lead as Pb	μg/L	<0.5
18	Cadmium as Cd	μg/L	<0.5
19	Total Chromium as Cr	μg/L	0.18
20	Zinc as Zn	μg/L	1.6
21	Fluoride as F	mg/L	0.06
22	Iron as Fe	mg/L	12
23	Nitrate	mg/L	2.2
24	Sodium as Na	mg/L	1.4
25	Potassium as K	mg/L	2.9
26	Sulfate	mg/L	1.6
27	Nitrate as NO ₃	mg/L	2.59
28	Total Silica as SiO ₂	mg/L	6.4
29	Total dissolved Solid	mg/L	598

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



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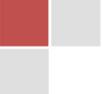
ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/02/04/22		Report No.- OCPL/EMIL/02/04/22	
Name & Address of Client	M/S ESSEL MINING & INDUSTRIES LTD. P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	NANDIGUTU	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	06- Apr -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	07- Apr -2022
Sample type	Surface Water	Date of Analysis	07- Apr -2022
Required parameters	As described in W/O	Date of Issue of report	12- Apr -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	26.6
4	pH	-	7.0
5	Total Suspended Solids	mg/L	26
6	Total Dissolved Solid	mg/L	652
7	Biochemical Oxygen Demand at 27°C	mg/L	3.38
8	Chemical Oxygen Demand	mg/L	2.1
9	Total Residual Chlorine	mg/L	1.5
10	Alkalinity	mg/L	34.5
11	Calcium	mg/L	21.4

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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

12	Magnesium	mg/L	22.8
13	Total Hardness as CaCO ₃	mg/L	54.2
14	Electrical Conductivity	µs/cm	75
15	Turbidity	NTU	16.4
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	<0.05
19	Total Chromium as Cr	µg/L	<0.05
20	Zinc as Zn	µg/L	0.17
21	Fluoride as F	mg/L	<0.05
22	Iron as Fe	mg/L	32
23	Nitrate	mg/L	4.2
24	Sodium as Na	mg/L	2.2
25	Potassium as K	mg/L	1.69
26	Sulfate	mg/L	<0.01
27	Nitrate as NO ₃	mg/L	1.82
28	Total Silica as SiO ₂	mg/L	3.6
29	Total dissolved Solid	mg/L	652

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/03/04/22		Report No.- OCPL/EMIL/03/04/22	
Name & Address of Client	M/S ESSEL MINING & INDUSTRIES LTD. P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	RESERVOUR POND INSIDE PLANT PREMISES	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	06- Apr -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	07- Apr -2022
Sample type	Surface Water	Date of Analysis	07- Apr -2022
Required parameters	As described in W/O	Date of Issue of report	12- Apr -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.2
2	Odour	-	Agreeable
3	Temperature	°C	26.8
4	pH	-	7.2
5	Total Suspended Solids	mg/L	109
6	Total Dissolved Solid	mg/L	761
7	Biochemical Oxygen Demand at 27°C	mg/L	10.4
8	Chemical Oxygen Demand	mg/L	5.2
9	Total Residual Chlorine	mg/L	4
10	Alkalinity	mg/L	92.5
11	Calcium	mg/L	48.9

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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

12	Magnesium	mg/L	32.98
13	Total Hardness as CaCO ₃	mg/L	175.6
14	Electrical Conductivity	µs/cm	214
15	Turbidity	NTU	52
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	0.18
18	Cadmium as Cd	µg/L	0.24
19	Total Chromium as Cr	µg/L	0.22
20	Zinc as Zn	µg/L	0.31
21	Fluoride as F	mg/L	<0.05
22	Iron as Fe	mg/L	35.4
23	Nitrate	mg/L	2.6
24	Sodium as Na	mg/L	11.5
25	Potassium as K	mg/L	2.4
26	Sulfate	mg/L	6.2
27	Nitrate as NO ₃	mg/L	5.98
28	Total Silica as SiO ₂	mg/L	11.8
29	Total dissolved Solid	mg/L	761

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com |

ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/04/04/22		Report No.- OCPL/EMIL/04/04/22	
Name & Address of Client	M/S ESSEL MINING & INDUSTRIES LTD. P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	DALKI NALA, NEAR PLANT	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	06- Apr -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	07- Apr -2022
Sample type	Surface Water	Date of Analysis	07- Apr -2022
Required parameters	As described in W/O	Date of Issue of report	12- Apr -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.0
2	Odour	-	Agreeable
3	Temperature	°C	25.4
4	pH	-	6.9
5	Total Suspended Solids	mg/L	29.4
6	Total Dissolved Solid	mg/L	574
7	Biochemical Oxygen Demand at 27°C	mg/L	4.18
8	Chemical Oxygen Demand	mg/L	2.6
9	Total Residual Chlorine	mg/L	1.2
10	Alkalinity	mg/L	75
11	Calcium	mg/L	28
12	Magnesium	mg/L	36.8

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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

13	Total Hardness as CaCO ₃	mg/L	37.2
14	Electrical Conductivity	µs/cm	114.6
15	Turbidity	NTU	16.5
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	<0.5
18	Cadmium as Cd	µg/L	<0.5
19	Total Chromium as Cr	µg/L	0.08
20	Zinc as Zn	µg/L	3.9
21	Fluoride as F	mg/L	0.2
22	Iron as Fe	mg/L	16.6
23	Nitrate	mg/L	8.4
24	Sodium as Na	mg/L	6.0
25	Potassium as K	mg/L	2.2
26	Sulfate	mg/L	11
27	Nitrate as NO ₃	mg/L	17.5
28	Total Silica as SiO ₂	mg/L	7.1
29	Total dissolved Solid	mg/L	574

Sampling By: Mr. Hrusikesh Das



Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com |

ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/05/04/22		Report No.- OCPL/EMIL/05/04/22	
Name & Address of Client	M/S ESSEL MINING & INDUSTRIES LTD. P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	NAIBHANGA	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	06- Apr -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	07- Apr -2022
Sample type	Surface Water	Date of Analysis	07- Apr -2022
Required parameters	As described in W/O	Date of Issue of report	12- Apr -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	27.2
4	pH	-	7.1
5	Total Suspended Solids	mg/L	22.4
6	Total Dissolved Solid	mg/L	642
7	Biochemical Oxygen Demand at 27°C	mg/L	4.9
8	Chemical Oxygen Demand	mg/L	3.25
9	Total Residual Chlorine	mg/L	0.24
10	Alkalinity	mg/L	31.4
11	Calcium	mg/L	27.5
12	Magnesium	mg/L	31

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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

13	Total Hardness as CaCO ₃	mg/L	32.8
14	Electrical Conductivity	μs/cm	85.6
15	Turbidity	NTU	24
16	Arsenic as As	μg/L	0.42
17	Lead as Pb	μg/L	0.4
18	Cadmium as Cd	μg/L	ND
19	Total Chromium as Cr	μg/L	<0.5
20	Zinc as Zn	μg/L	1.2
21	Fluoride as F	mg/L	0.44
22	Iron as Fe	mg/L	24.6
23	Nitrate	mg/L	2.25
24	Sodium as Na	mg/L	3.5
25	Potassium as K	mg/L	24
26	Sulfate	mg/L	6.1
27	Nitrate as NO ₃	mg/L	7.0
28	Total Silica as SiO ₂	mg/L	3.5
29	Total dissolved Solid	mg/L	642

Sampling By: Mr. Hrusikesh Das



Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com |

TEST REPORT

Date: 18 -Apr-2022

Name & address of Client:

M/S ESSEL MINING & INDUSTRIES LTD

P.O. Basantpur, Tahasil- Jhumpura,

Keonjhar, Odisha- 758034

Total no of sample: Five locations.

Sample details: Ground Water

Sample location: M/S ESSEL MINING & INDUSTRIES LTD, Keonjhar, Odisha

Sl. No.	Sample no.	Location details
1	1	JARPADA
2	2	NANDIGUTU
3	3	NAIBHANGA
4	4	PLANT- 1 (Near Canteen)
5	5	PLANT- 2 (Near Tailing pond)

Sample Ref No.: EMIL/GW/BBSR/308

Report no.: EMIL/BBS/354

Sample description: Ground Water

Date of sample received: 05 -Apr-2022

Date of Analysis: 06 -Apr-2022

Date of Issue of report: 18 -Apr-2022



ANALYSIS RESULT

With drinking water specifications, BIS (As per 10500- 2012 BIS)

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			1:	2:	3:	4:	5:		
1	Colour	Pt-Co	1.1	1.0	1.1	1.0	1.2		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	26.8	28.6	27.5	27.8	28.2		
4	pH	-	7.1	6.9	7.1	6.9	7.1	6.5- 8.5	No relaxation
5	Total Hardness (as CaCO ₃)	mg/L	58.2	52.5	46.5	41.8	47	300	600
6	Calcium	mg/L	11.2	14.8	12.6	17	12.5	75	200
7	Magnesium	mg/L	1.2	2.6	2.24	3.4	2.4	30	No relaxation
8	Chloride	mg/L	22.8	21	16	17.9	19.5	250	1000
9	Alkalinity	mg/L	11.5	18	21.2	17.08	20	200	600
10	Electrical Conductivity	µs/cm	61.4	46.8	52.4	37.8	48	--	--
11	Arsenic as As	µg/L	ND	ND	0.08	0.04	ND	10	No relaxation
12	Lead as Pb	µg/L	0.05	ND	0.14	0.42	ND	10	No relaxation
13	Cadmium as Cd	µg/L	0.04	0.17	ND	0.25	0.04	3.0	No relaxation
14	Total Chromium as Cr	µg/L	0.24	0.06	0.08	0.14	0.08	50	No relaxation
15	Zinc as Zn	µg/L	51.8	65.4	88.6	82.5	94	5000	No relaxation
16	Fluoride as F	mg/L	ND	0.06	ND	0.04	ND	1.0	1.9
17	Iron as Fe	µg/L	14.8	18.4	6	6.8	17	300	1000
18	Nitrate	mg/L	0.05	1.8	0.06	0.6	0.8	45	100
19	Sodium as Na	mg/L	1.7	0.4	0.5	2.2	3.8	150	No relaxation
20	Potassium as K	mg/L	ND	ND	ND	0.04	0.06	12	No relaxation
21	Sulfate	mg/L	ND	0.26	0.88	0.04	0.86	200	400
22	Total Silica as	mg/L	0.09	0.08	ND	0.05	0.6	--	--

	SiO ₂								
23	Total suspended Solid	mg/L	0.48	0.62	1.2	1.8	1.68	--	--
24	Total dissolved Solid	mg/L	62	86	88	186	193	250	2000
25	Turbidity	NTU	0.05	0.02	0.42	0.08	0.06	5	10

Report prepared by:



Signature

Laboratory In-Charge

*ND= Not Detectable

Standards are as per Government Notification Dtd. 19th May '93.

Sampling & testing has been done as per IS Code 3025.

***Monthly Report On
Ground water Level Monitoring Data
for the Month of April - 2022***

For

M/S ESSEL MINING & INDUSTRIES LTD

P.O. Basantpur, Tahasil- Jhumpura,

Keonjhar, Odisha- 758034

Prepared By:

Orectic Consulting Private Limited

Housing Board Colony, Chandrasekharpur,

BhubaneGWLar- 751024, Odisha.

ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

REPORT ON GROUND WATER LEVEL ANALYSIS FOR THE MONTH OF APRIL - 2022

Summary Sheet of Monitoring (Water):

SI No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	JARPADA	16- Apr-2022	OCPL/GWL/01/04/22
2.	Sample 02	NANDIGUTU	16- Apr-2022	OCPL/GWL/02/04/22
3.	Sample 03	NAIBHANGA	16- Apr-2022	OCPL/GWL/03/04/22
4.	Sample 04	PLANT- 1 (Near Canteen)	16- Apr-2022	OCPL/GWL/04/04/22
5.	Sample 05	PLANT- 2 (Near Tailing pond)	16- Apr-2022	OCPL/GWL/05/04/22



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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

MONITORING RESULT

Sl No.	Name of the location	Type of well	Dia. (m)	Depth of the well (m)	Depth of the water table BGL (M)	Remarks
1	JARPADA	Dugwell	0.8	8.2	6.8	--
2	NANDIGUTU	Dugwell	1.2	9.5	7.26	--
3	NAIBHANGA	Dugwell	1.0	8.6	7.82	--
4	PLANT- 1 (Near Canteen)	Bore-well	0.1	62	12.9	--
5	PLANT- 2 (Near Tailing pond)	Bore-well	0.1	60	46.8	--

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



***Monthly Report On
Environmental Monitoring Data
for the Month of May - 2022***

For

M/S ESSEL MINING & INDUSTRIES LTD.

P.O. Basantpur, Tahasil- Jhumpura,

Keonjhar, Odisha- 758034

Prepared By:

Orectic Consulting Private Limited

Housing Board Colony, Chandrasekharpur,

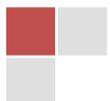
Bhubaneswar- 751024, Odisha.

ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

CONTENTS

Sl. No.	Description	Pages
01	Location & Weekly Monitoring Schedule	01
02	Summary Sheet of Sampling (Ambient Air)	02
03	Ambient Air Monitoring Data	03
04	Noise Level Monitoring Data	09
05	Summary Sheet of Sampling (Water)	10
06	Surface water Analysis Report	11



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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Weekly Ambient Air Monitoring Data Generated For the Month of May– 2022

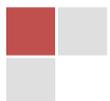
LOCATION AND WEEKLY MONITORING SCHEDULE (FOR MAY- 2022)

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Filter Cake Storage Yard		√				√	
Near Crushing Plant		√				√	
Near Raw Material Stack Yard		√				√	
Nediguth Village		√				√	

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com |

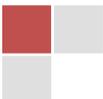


ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Summary Sheet of Sampling (AAQ):

SI No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Filter cake storage yard	02.05.2022	OCPL/ AAQ/EMIL/01/05/22
2.	Sample 02	Near Crushing Plant	02.05.2022	OCPL/ AAQ/EMIL/02/05/22
3.	Sample 03	Near Raw Material Stack Yard	02.05.2022	OCPL/ AAQ/EMIL/03/05/22
4.	Sample 04	Nedigutha Village	03.05.2022	OCPL/ AAQ/EMIL/04/05/22
5.	Sample 05	Near Filter cake storage yard	06.05.2022	OCPL/ AAQ/EMIL/05/05/22
6.	Sample 06	Near Crushing Plant	06.05.2022	OCPL/ AAQ/EMIL/06/05/22
7.	Sample 07	Near Raw Material Stack Yard	06.05.2022	OCPL/ AAQ/EMIL/07/05/22
8.	Sample 08	Nedigutha Village	10.05.2022	OCPL/ AAQ/EMIL/08/05/22
9.	Sample 09	Near Filter cake storage yard	09.05.2022	OCPL/ AAQ/EMIL/09/05/22
10.	Sample 10	Near Crushing Plant	09.05.2022	OCPL/ AAQ/EMIL/10/05/22
11.	Sample 11	Near Raw Material Stack Yard	09.05.2022	OCPL/ AAQ/EMIL/11/05/22
12.	Sample 12	Nedigutha Village	17.05.2022	OCPL/ AAQ/EMIL/12/05/22
13.	Sample 13	Near Filter cake storage yard	13.05.2022	OCPL/ AAQ/EMIL/13/05/22
14.	Sample 14	Near Crushing Plant	13.05.2022	OCPL/ AAQ/EMIL/14/05/22
15.	Sample 15	Near Raw Material Stack Yard	13.05.2022	OCPL/ AAQ/EMIL/15/05/22
16.	Sample 16	Nedigutha Village	24.05.2022	OCPL/ AAQ/EMIL/16/05/22
17.	Sample 17	Near Filter cake storage yard	16.05.2022	OCPL/ AAQ/EMIL/17/05/22
18.	Sample 18	Near Crushing Plant	16.05.2022	OCPL/ AAQ/EMIL/18/05/22
19.	Sample 19	Near Raw Material Stack Yard	16.05.2022	OCPL/ AAQ/EMIL/19/05/22
20.	Sample 20	Nedigutha Village	31.05.2022	OCPL/ AAQ/EMIL/20/05/22
21.	Sample 21	Near Filter cake storage yard	20.05.2022	OCPL/ AAQ/EMIL/21/05/22
22.	Sample 22	Near Crushing Plant	20.05.2022	OCPL/ AAQ/EMIL/22/05/22
23.	Sample 23	Near Raw Material Stack Yard	20.05.2022	OCPL/ AAQ/EMIL/23/05/22
24.	Sample 24	Near Filter cake storage yard	23.05.2022	OCPL/ AAQ/EMIL/24/05/22
25.	Sample 25	Near Crushing Plant	23.05.2022	OCPL/ AAQ/EMIL/25/05/22
26.	Sample 26	Near Raw Material Stack Yard	23.05.2022	OCPL/ AAQ/EMIL/26/05/22
27.	Sample 27	Near Filter cake storage yard	27.05.2022	OCPL/ AAQ/EMIL/27/05/22
28.	Sample 28	Near Crushing Plant	27.05.2022	OCPL/ AAQ/EMIL/28/05/22
29.	Sample 29	Near Raw Material Stack Yard	27.05.2022	OCPL/ AAQ/EMIL/29/05/22
30.	Sample 30	Near Filter cake storage yard	30.05.2022	OCPL/ AAQ/EMIL/30/05/22
31.	Sample 31	Near Crushing Plant	30.05.2022	OCPL/ AAQ/EMIL/31/05/22
32.	Sample 32	Near Raw Material Stack Yard	30.05.2022	OCPL/ AAQ/EMIL/32/05/22

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

AMBIENT AIR MONITORING AS PER NAAQ STANDARDS FOR THE MONTH OF MAY-2022

LOCATION: Near Filter Cake Storage Yard

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									
		02.05.22	06.05.22	09.05.22	13.05.22	16.05.22	20.05.22	23.05.22	27.05.22	30.05.22	Avg
PM ₁₀	100	90.8	90	90.2	92.6	92.4	89	92.5	88.6	92	90.9
PM _{2.5}	60	59.2	58.4	59	59.6	54	57.6	57.6	58	60	59.71
Sulphur Dioxide (SO ₂)	80	39	38.2	42	40.2	42.8	38.6	44.6	38.4	42.5	40.7
Oxide of Nitrogen (NO ₂)	80	34	30.4	30.5	30	34.5	32	34.6	31.2	32.6	32.2
Lead (Pb)	1	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	185.4	182.5	180	181.4	183.5	179	178.4	182	185	181.91
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	40	38.5	40.6	41.4	37	38.8	42	41.5	42.5	40.25
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND								
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, &CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com



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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

AMBIENT AIR MONITORING AS PER NAAQ STANDARDS

FOR THE MONTH OF MAY-2022

LOCATION: Near Crushing Plant

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									
		02.05.22	06.05.22	09.05.22	13.05.22	16.05.22	20.05.22	23.05.22	27.05.22	30.05.22	Avg
PM ₁₀	100	90.5	92	92.8	91	89	88.4	88	92	93.4	90.78
PM _{2.5}	60	58	59	58.8	60	57	58.6	57.6	60	60	58.93
Sulphur Dioxide (SO ₂)	80	30.5	28	28.4	28.5	28	29	28.8	30.2	31.6	29.22
Oxide of Nitrogen (NO ₂)	80	29.4	28.6	29.7	28.4	29	28	27.8	31	32	29.32
Lead (Pb)	1.0	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	172.2	170	171.4	171	172.4	169.2	171.8	172.2	174	171.57
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	40.8	38	38.8	38.5	40	38.4	42	42.8	42.4	40.18
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP)	01	ND	ND								
Particulate phase only(ng/m ³)											
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das



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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

AMBIENT AIR MONITORING AS PER NAAQ STANDARDS

FOR THE MONTH OF MAY-2022

LOCATION: *Near Raw Material Stack Yard*

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									
		02.05.22	06.05.22	09.05.22	13.05.22	16.05.22	20.05.22	23.05.22	27.05.22	30.05.22	Avg
PM ₁₀	100	90	88.8	88.5	91	89.6	90.2	88	91.8	92.2	90.01
PM _{2.5}	60	59.6	58.5	60	60	59.4	60	58.6	59	59.5	59.31
Sulphur Dioxide (SO ₂)	80	32.4	29	30.5	30	30.2	32	32.8	30.2	34	31.23
Oxide of Nitrogen (NO ₂)	80	30	33.8	31.4	30.4	30.4	30.8	32.5	29	32.8	31.23
Lead (Pb)	1.0	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	176.8	178	181.2	175.8	178.8	177.8	179.6	181	180.4	178.8
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	43	42.5	40.6	41.9	39.6	40.8	43.4	45.8	44.2	42.42
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP)	01	ND	ND								
Particulate phase only(ng/m ³)											
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com |



ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

AMBIENT AIR MONITORING AS PER NAAQ STANDARDS FOR THE MONTH OF MAY- 2022

LOCATION: Nedigutha Village

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	Date- 03.05.2022	Date- 10.05.2022	Date- 17.05.2022	Date- 24.05.2022	Date- 31.05.2022	Avg.
PM ₁₀	100	56.8	55.2	50	57.5	52	54.3
PM _{2.5}	60	50.2	47	48.6	48	50	48.76
Sulphur Dioxide (SO ₂)	80	18	22.6	22.4	23.6	22	21.72
Oxide of Nitrogen (NO ₂)	80	19.5	22	21.8	21.8	23	21.62
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO) (8 Hrs)	2000	145	142.6	146	145.8	148	145.48
Ozone(O ₃)	180	ND	ND	ND	ND	ND	ND
Ammonia(NH ₃)	400	16.2	14	16.5	14.8	15.9	15.48
Benzene(C ₆ H ₆)	05	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m ³)	06	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m ³)	20	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182
Part IV, II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



Mobile Number - 9439115280. 09853120125 || Email ID - info@orecticconsulting.com |

ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

NOISE LEVEL MONITORING RESULT IN dBA

Date of Monitoring: 05.05.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	56.8	62	56	55	40.6
2	First-Aid Room	32.5	48	55	44.3	29.1
3	Security Office	34	46.6	51.9	42.8	28.8
4	Administrative building	30	38	29.6	32.4	24
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Sampling By: Mr. Hrusikesh Das



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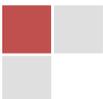
ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

REPORT ON SURFACE WATER ANALYSIS FOR THE MONTH OF MAY - 2022

Summary Sheet of Sampling (Water):

SI No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	JARPADA	09- May -2022	OCPL/SW/01/05/22
2.	Sample 02	NANDIGUTU	09- May -2022	OCPL/SW/02/05/22
3.	Sample 03	RESERVOUR POND INSIDE PLANT	09- May -2022	OCPL/SW/03/05/22
4.	Sample 04	DALKI NALA NEAR PLANT	09- May -2022	OCPL/SW/04/05/22
5.	Sample 05	NAIBHANGA	09- May -2022	OCPL/SW/05/05/22

Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com | 

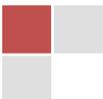
ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/01/05/22		Report No.- OCPL/EMIL/01/05/22	
Name & Address of Client	M/S ESSEL MINING & INDUSTRIES LTD. P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	JARPADA	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	09- May -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	10- May -2022
Sample type	Surface Water	Date of Analysis	10- May -2022
Required parameters	As described in W/O	Date of Issue of report	16- May -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	25.6
4	pH	-	6.8
5	Total Suspended Solids	mg/L	38
6	Total Dissolved Solid	mg/L	577
7	Biochemical Oxygen Demand at 27°C	mg/L	6.5
8	Chemical Oxygen Demand	mg/L	2.2
9	Total Residual Chlorine	mg/L	1.6
10	Alkalinity	mg/L	98
11	Calcium	mg/L	40

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

12	Magnesium	mg/L	26.2
13	Total Hardness as CaCO ₃	mg/L	62.8
14	Electrical Conductivity	µs/cm	108
15	Turbidity	NTU	6
16	Arsenic as As	µg/L	0.18
17	Lead as Pb	µg/L	<0.5
18	Cadmium as Cd	µg/L	<0.5
19	Total Chromium as Cr	µg/L	0.18
20	Zinc as Zn	µg/L	1.2
21	Fluoride as F	mg/L	0.06
22	Iron as Fe	mg/L	11
23	Nitrate	mg/L	2.4
24	Sodium as Na	mg/L	1.8
25	Potassium as K	mg/L	2.2
26	Sulfate	mg/L	1.4
27	Nitrate as NO ₃	mg/L	2.8
28	Total Silica as SiO ₂	mg/L	5.4
29	Total dissolved Solid	mg/L	577

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



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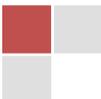
ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/02/05/22		Report No.- OCPL/EMIL/02/05/22	
Name & Address of Client	M/S ESSEL MINING & INDUSTRIES LTD. P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	NANDIGUTU	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	09- May -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	10- May -2022
Sample type	Surface Water	Date of Analysis	10- May -2022
Required parameters	As described in W/O	Date of Issue of report	16- May -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	26.7
4	pH	-	7.1
5	Total Suspended Solids	mg/L	25
6	Total Dissolved Solid	mg/L	533
7	Biochemical Oxygen Demand at 27°C	mg/L	3.8
8	Chemical Oxygen Demand	mg/L	2.4
9	Total Residual Chlorine	mg/L	2.1
10	Alkalinity	mg/L	37
11	Calcium	mg/L	20.8

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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

12	Magnesium	mg/L	26.2
13	Total Hardness as CaCO ₃	mg/L	42.8
14	Electrical Conductivity	µs/cm	79
15	Turbidity	NTU	14
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	<0.05
19	Total Chromium as Cr	µg/L	<0.05
20	Zinc as Zn	µg/L	0.14
21	Fluoride as F	mg/L	<0.05
22	Iron as Fe	mg/L	36.8
23	Nitrate	mg/L	4.9
24	Sodium as Na	mg/L	2.8
25	Potassium as K	mg/L	1.08
26	Sulfate	mg/L	<0.01
27	Nitrate as NO ₃	mg/L	2.1
28	Total Silica as SiO ₂	mg/L	2.4
29	Total dissolved Solid	mg/L	533

Sampling By: Mr. Hrusikesh Das



Tested By: OCPL

Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com |

ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/03/05/22		Report No.- OCPL/EMIL/03/05/22	
Name & Address of Client	M/S ESSEL MINING & INDUSTRIES LTD. P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	RESERVOUR POND INSIDE PLANT PREMISES	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	09- May -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	10- May -2022
Sample type	Surface Water	Date of Analysis	10- May -2022
Required parameters	As described in W/O	Date of Issue of report	16- May -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.2
2	Odour	-	Agreeable
3	Temperature	°C	27
4	pH	-	7.3
5	Total Suspended Solids	mg/L	114.6
6	Total Dissolved Solid	mg/L	825
7	Biochemical Oxygen Demand at 27°C	mg/L	10.8
8	Chemical Oxygen Demand	mg/L	5.8
9	Total Residual Chlorine	mg/L	6.2
10	Alkalinity	mg/L	102.4
11	Calcium	mg/L	42

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

12	Magnesium	mg/L	34
13	Total Hardness as CaCO ₃	mg/L	181.8
14	Electrical Conductivity	µs/cm	179
15	Turbidity	NTU	48
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	0.26
18	Cadmium as Cd	µg/L	0.22
19	Total Chromium as Cr	µg/L	0.18
20	Zinc as Zn	µg/L	0.39
21	Fluoride as F	mg/L	<0.05
22	Iron as Fe	mg/L	38.2
23	Nitrate	mg/L	2
24	Sodium as Na	mg/L	14
25	Potassium as K	mg/L	2.2
26	Sulfate	mg/L	5.4
27	Nitrate as NO ₃	mg/L	6.6
28	Total Silica as SiO ₂	mg/L	14
29	Total dissolved Solid	mg/L	825

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



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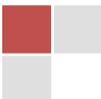
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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/04/05/22		Report No.- OCPL/EMIL/04/05/22	
Name & Address of Client	M/S ESSEL MINING & INDUSTRIES LTD. P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	DALKI NALA, NEAR PLANT	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	09- May -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	10- May -2022
Sample type	Surface Water	Date of Analysis	10- May -2022
Required parameters	As described in W/O	Date of Issue of report	16- May -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.0
2	Odour	-	Agreeable
3	Temperature	°C	26
4	pH	-	7.1
5	Total Suspended Solids	mg/L	26
6	Total Dissolved Solid	mg/L	541
7	Biochemical Oxygen Demand at 27°C	mg/L	5.2
8	Chemical Oxygen Demand	mg/L	2.8
9	Total Residual Chlorine	mg/L	1.4
10	Alkalinity	mg/L	84.6
11	Calcium	mg/L	26.4
12	Magnesium	mg/L	44

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

13	Total Hardness as CaCO ₃	mg/L	39
14	Electrical Conductivity	μs/cm	98
15	Turbidity	NTU	14.8
16	Arsenic as As	μg/L	ND
17	Lead as Pb	μg/L	<0.5
18	Cadmium as Cd	μg/L	<0.5
19	Total Chromium as Cr	μg/L	0.21
20	Zinc as Zn	μg/L	3.2
21	Fluoride as F	mg/L	0.08
22	Iron as Fe	mg/L	14
23	Nitrate	mg/L	8.2
24	Sodium as Na	mg/L	5
25	Potassium as K	mg/L	1.8
26	Sulfate	mg/L	8
27	Nitrate as NO ₃	mg/L	18.2
28	Total Silica as SiO ₂	mg/L	6
29	Total dissolved Solid	mg/L	541

Sampling By: Mr. Hrusikesh Das



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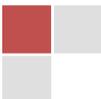
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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/05/05/22		Report No.- OCPL/EMIL/05/05/22	
Name & Address of Client	M/S ESSEL MINING & INDUSTRIES LTD. P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	NAIBHANGA	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	09- May -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	10- May -2022
Sample type	Surface Water	Date of Analysis	10- May -2022
Required parameters	As described in W/O	Date of Issue of report	16- May -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	27.0
4	pH	-	6.9
5	Total Suspended Solids	mg/L	24
6	Total Dissolved Solid	mg/L	658
7	Biochemical Oxygen Demand at 27°C	mg/L	5.2
8	Chemical Oxygen Demand	mg/L	3.6
9	Total Residual Chlorine	mg/L	0.6
10	Alkalinity	mg/L	36
11	Calcium	mg/L	32
12	Magnesium	mg/L	28.4

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

13	Total Hardness as CaCO ₃	mg/L	30.9
14	Electrical Conductivity	µs/cm	82
15	Turbidity	NTU	21
16	Arsenic as As	µg/L	0.36
17	Lead as Pb	µg/L	0.21
18	Cadmium as Cd	µg/L	<0.5
19	Total Chromium as Cr	µg/L	<0.5
20	Zinc as Zn	µg/L	2
21	Fluoride as F	mg/L	0.08
22	Iron as Fe	mg/L	22
23	Nitrate	mg/L	1.94
24	Sodium as Na	mg/L	3.8
25	Potassium as K	mg/L	19.6
26	Sulfate	mg/L	5.85
27	Nitrate as NO ₃	mg/L	7.1
28	Total Silica as SiO ₂	mg/L	3.2
29	Total dissolved Solid	mg/L	658

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



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***Monthly Report On
Environmental Monitoring Data
for the Month of June - 2022***

For

M/S ESSEL MINING & INDUSTRIES LTD

P.O. Basantpur, Tahasil- Jhumpura,

Keonjhar, Odisha- 758034

Prepared By:

Orectic Consulting Private Limited

Housing Board Colony, Chandrasekharpur,

Bhubaneswar- 751024, Odisha.

ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

CONTENTS

Sl. No.	Description	Pages
01	Location & Weekly Monitoring Schedule	01
02	Summary Sheet of Sampling (Ambient Air)	02
03	Ambient Air Monitoring Data	03
04	Noise Level Monitoring Data	09
05	Summary Sheet of Sampling (Water)	10
06	Surface water Analysis Report	11



ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Weekly Ambient Air Monitoring Data Generated For the Month of June– 2022

LOCATION AND WEEKLY MONITORING SCHEDULE (FOR JUNE- 2022)

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Filter Cake Storage Yard		√			√		
Near Crushing Plant		√			√		
Near Raw Material Stack Yard		√			√		
Nediguth Village		√			√		

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Summary Sheet of Sampling (AAQ):

SI No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Filter cake storage yard	02.06.2022	OCPL/ AAQ/EMIL /01/06/22
2.	Sample 02	Near Crushing Plant	02.06.2022	OCPL/ AAQ/EMIL /02/06/22
3.	Sample 03	Near Raw Material Stack Yard	02.06.2022	OCPL/ AAQ/EMIL /03/06/22
4.	Sample 04	Nedigutha Village	01.06.2022	OCPL/ AAQ/EMIL /04/06/22
5.	Sample 05	Near Filter cake storage yard	06.06.2022	OCPL/ AAQ/EMIL /05/06/22
6.	Sample 06	Near Crushing Plant	06.06.2022	OCPL/ AAQ/EMIL /06/06/22
7.	Sample 07	Near Raw Material Stack Yard	06.06.2022	OCPL/ AAQ/EMIL /07/06/22
8.	Sample 08	Nedigutha Village	08.06.2022	OCPL/ AAQ/EMIL /08/06/22
9.	Sample 09	Near Filter cake storage yard	09.06.2022	OCPL/ AAQ/EMIL /09/06/22
10.	Sample 10	Near Crushing Plant	09.06.2022	OCPL/ AAQ/EMIL /10/06/22
11.	Sample 11	Near Raw Material Stack Yard	09.06.2022	OCPL/ AAQ/EMIL /11/06/22
12.	Sample 12	Nedigutha Village	15.06.2022	OCPL/ AAQ/EMIL /12/06/22
13.	Sample 13	Near Filter cake storage yard	13.06.2022	OCPL/ AAQ/EMIL /13/06/22
14.	Sample 14	Near Crushing Plant	13.06.2022	OCPL/ AAQ/EMIL /14/06/22
15.	Sample 15	Near Raw Material Stack Yard	13.06.2022	OCPL/ AAQ/EMIL /15/06/22
16.	Sample 16	Nedigutha Village	22.06.2022	OCPL/ AAQ/EMIL /16/06/22
17.	Sample 17	Near Filter cake storage yard	16.06.2022	OCPL/ AAQ/EMIL /17/06/22
18.	Sample 18	Near Crushing Plant	16.06.2022	OCPL/ AAQ/EMIL /18/06/22
19.	Sample 19	Near Raw Material Stack Yard	16.06.2022	OCPL/ AAQ/EMIL /19/06/22
20.	Sample 20	Nedigutha Village	29.06.2022	OCPL/ AAQ/EMIL /20/06/22
21.	Sample 21	Near Filter cake storage yard	20.06.2022	OCPL/ AAQ/EMIL /21/06/22
22.	Sample 22	Near Crushing Plant	20.06.2022	OCPL/ AAQ/EMIL /22/06/22
23.	Sample 23	Near Raw Material Stack Yard	20.06.2022	OCPL/ AAQ/EMIL /23/06/22
24.	Sample 24	Near Filter cake storage yard	23.06.2022	OCPL/ AAQ/EMIL /24/06/22
25.	Sample 25	Near Crushing Plant	23.06.2022	OCPL/ AAQ/EMIL /25/06/22
26.	Sample 26	Near Raw Material Stack Yard	23.06.2022	OCPL/ AAQ/EMIL /26/06/22
27.	Sample 27	Near Filter cake storage yard	27.06.2022	OCPL/ AAQ/EMIL /27/06/22
28.	Sample 28	Near Crushing Plant	27.06.2022	OCPL/ AAQ/EMIL /28/06/22
29.	Sample 29	Near Raw Material Stack Yard	27.06.2022	OCPL/ AAQ/EMIL /29/06/22
30.	Sample 30	Near Filter cake storage yard	30.06.2022	OCPL/ AAQ/EMIL /30/06/22
31.	Sample 31	Near Crushing Plant	30.06.2022	OCPL/ AAQ/EMIL /31/06/22
32.	Sample 32	Near Raw Material Stack Yard	30.06.2022	OCPL/ AAQ/EMIL /32/06/22

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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

AMBIENT AIR MONITORING AS PER NAAQ STANDARDS FOR THE MONTH OF JUNE-2022

LOCATION: Near Filter Cake Storage Yard

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									
		02.06.22	06.06.22	09.06.22	13.06.22	16.06.22	20.06.22	23.06.22	27.06.22	30.06.22	Avg
PM ₁₀	100	92.6	90	88	90.5	86.8	90.4	87	88.2	90.5	89.33
PM _{2.5}	60	58.6	59.4	57.8	60	58.4	59.2	58	58.8	60	59.8
Sulphur Dioxide (SO ₂)	80	44	44.2	40.8	42	40	42.6	38.8	40.6	38.2	41.24
Oxide of Nitrogen (NO ₂)	80	35.4	34	34.2	35.6	32	30.4	32.8	29.8	30.6	32.75
Lead (Pb)	1	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	188	184.6	182	176.8	178	178.8	170	181.4	178.2	179.75
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	44.6	44	42.5	43	38	39.5	40.2	40	38.2	41.11
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND								
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, &CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das

Tested By: ORECTIC

Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsu



ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

AMBIENT AIR MONITORING AS PER NAAQ STANDARDS

FOR THE MONTH OF JUNE-2022

LOCATION: Near Crushing Plant

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									
		02.06.22	06.06.22	09.06.22	13.06.22	16.06.22	20.06.22	23.06.22	27.06.22	30.06.22	Avg
PM ₁₀	100	94.4	92.6	92.8	94	90.8	91	91.2	92	91.4	92.24
PM _{2.5}	60	59	58.6	58	57.2	56	59	56.6	58.4	56.4	58.02
Sulphur Dioxide (SO ₂)	80	32.6	29	28.4	28	28.2	27.4	26	26.5	25.4	27.944
Oxide of Nitrogen (NO ₂)	80	30.6	31.2	30	29.8	26	27.4	27.8	25	26.2	28.22
Lead (Pb)	1.0	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	172.8	172	171.8	171	168	169.2	168.2	166	166.8	169.53
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	41.6	42	40.8	40.6	39	39.6	38	38.2	38.4	39.8
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP)	01	ND	ND								
Particulate phase only(ng/m ³)											
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das

Tested By: QCPL

Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com



ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

AMBIENT AIR MONITORING AS PER NAAQ STANDARDS

FOR THE MONTH OF JUNE-2022

LOCATION: *Near Raw Material Stack Yard*

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									
		02.06.22	06.06.22	09.06.22	13.06.22	16.06.22	20.06.22	23.06.22	27.06.22	30.06.22	Avg
PM ₁₀	100	90.8	88	86.8	88.4	89	90	87.6	86.4	88.2	88.35
PM _{2.5}	60	59.5	60	58.4	59.8	58	59.6	58.5	60	56.8	59.95
Sulphur Dioxide (SO ₂)	80	32	32.2	28.4	28	27.8	28.2	26.6	27	28.8	28.77
Oxide of Nitrogen (NO ₂)	80	31.5	30	28.4	27	26.2	26	28	28.4	28	28.16
Lead (Pb)	1.0	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	178	177.5	176.5	177	175.4	174	176	175.8	178.2	176.4
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	42.4	41	40.8	40	38.8	39	36	37.8	38.2	39.33
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP)	01	ND	ND								
Particulate phase only(ng/m ³)											
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182 Part IV
II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com |



ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

AMBIENT AIR MONITORING AS PER NAAQ STANDARDS FOR THE MONTH OF JUNE- 2022

LOCATION: Nedigutha Village

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	Date- 01.06.2022	Date- 08.06.2022	Date- 15.06.2022	Date- 22.06.2022	Date- 29.06.2022	Avg.
PM ₁₀	100	54	52.4	48	52.7	50	51.42
PM _{2.5}	60	48	46.2	46.8	46	48.2	47.04
Sulphur Dioxide (SO ₂)	80	20	20.5	18	20.8	22	20.26
Oxide of Nitrogen (NO ₂)	80	20.6	20	20.4	19.8	20	20.16
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO) (8 Hrs)	2000	146.8	145	144	142.8	142	144.12
Ozone(O ₃)	180	ND	ND	ND	ND	ND	ND
Ammonia(NH ₃)	400	16	15.2	16.2	14	13	14.88
Benzene(C ₆ H ₆)	05	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m ³)	06	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m ³)	20	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182
Part IV, II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com



ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

NOISE LEVEL MONITORING RESULT IN dBA

Date of Monitoring: 10.06.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	55.4	63	48	44	42
2	First-Aid Room	35.6	50.8	54	46.8	32
3	Security Office	35	48	53.2	44.6	34.5
4	Administrative building	34.5	36	32.5	34	25.2
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Sampling By: Mr. Hrusikesh Das



Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com |

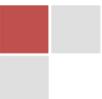
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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

REPORT ON SURFACE WATER ANALYSIS FOR THE MONTH OF JUNE - 2022

Summary Sheet of Sampling (Water):

SI No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	JARPADA	09- June -2022	OCPL/SW/01/06/22
2.	Sample 02	NANDIGUTU	09- June -2022	OCPL/SW/02/06/22
3.	Sample 03	RESERVOUR POND INSIDE PLANT	09- June -2022	OCPL/SW/03/06/22
4.	Sample 04	DALKI NALA NEAR PLANT	09- June -2022	OCPL/SW/04/06/22
5.	Sample 05	NAIBHANGA	09- June -2022	OCPL/SW/05/06/22

Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com | 

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/01/06/22		Report No.- OCPL/EMIL /01/06/22	
Name & Address of Client	ESSEL MINING & INDUSTRIES LTD P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	JARPADA	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	07- June -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	08- June -2022
Sample type	Surface Water	Date of Analysis	08- June -2022
Required parameters	As described in W/O	Date of Issue of report	15- June -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	25.2
4	pH	-	6.9
5	Total Suspended Solids	mg/L	42
6	Total Dissolved Solid	mg/L	618
7	Biochemical Oxygen Demand at 27°C	mg/L	5.8
8	Chemical Oxygen Demand	mg/L	2.1
9	Total Residual Chlorine	mg/L	1.4
10	Alkalinity	mg/L	106.4
11	Calcium	mg/L	38.8

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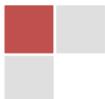
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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

12	Magnesium	mg/L	26
13	Total Hardness as CaCO ₃	mg/L	56.4
14	Electrical Conductivity	μs/cm	124
15	Turbidity	NTU	8.8
16	Arsenic as As	μg/L	0.14
17	Lead as Pb	μg/L	<0.5
18	Cadmium as Cd	μg/L	<0.5
19	Total Chromium as Cr	μg/L	0.11
20	Zinc as Zn	μg/L	0.8
21	Fluoride as F	mg/L	0.1
22	Iron as Fe	mg/L	14
23	Nitrate	mg/L	2.2
24	Sodium as Na	mg/L	2.5
25	Potassium as K	mg/L	2.8
26	Sulfate	mg/L	1.26
27	Nitrate as NO ₃	mg/L	3.1
28	Total Silica as SiO ₂	mg/L	5.8
29	Total dissolved Solid	mg/L	618

Sampling By: Mr. Hrusikesh Das

Tested By: 


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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/02/06/22		Report No.- OCPL/EMIL /02/06/22	
Name & Address of Client	ESSEL MINING & INDUSTRIES LTD P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	NANDIGUTU	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	07- June -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	08- June -2022
Sample type	Surface Water	Date of Analysis	08- June -2022
Required parameters	As described in W/O	Date of Issue of report	15- June -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	26.2
4	pH	-	6.4
5	Total Suspended Solids	mg/L	28
6	Total Dissolved Solid	mg/L	586
7	Biochemical Oxygen Demand at 27°C	mg/L	3.2
8	Chemical Oxygen Demand	mg/L	3.6
9	Total Residual Chlorine	mg/L	1.8
10	Alkalinity	mg/L	44.8
11	Calcium	mg/L	25.8

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

12	Magnesium	mg/L	24
13	Total Hardness as CaCO ₃	mg/L	44.6
14	Electrical Conductivity	µs/cm	86
15	Turbidity	NTU	16.8
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	<0.05
19	Total Chromium as Cr	µg/L	<0.01
20	Zinc as Zn	µg/L	0.2
21	Fluoride as F	mg/L	<0.05
22	Iron as Fe	mg/L	32
23	Nitrate	mg/L	5.2
24	Sodium as Na	mg/L	2.4
25	Potassium as K	mg/L	1.02
26	Sulfate	mg/L	<0.01
27	Nitrate as NO ₃	mg/L	3.6
28	Total Silica as SiO ₂	mg/L	4.4
29	Total dissolved Solid	mg/L	586

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL
By: Oca



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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/03/06/22		Report No.- OCPL/EMIL /03/06/22	
Name & Address of Client	ESSEL MINING & INDUSTRIES LTD P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	RESERVOUR POND INSIDE PLANT PREMISES	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	07- June -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	08- June -2022
Sample type	Surface Water	Date of Analysis	08- June -2022
Required parameters	As described in W/O	Date of Issue of report	15- June -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.3
2	Odour	-	Agreeable
3	Temperature	°C	26.2
4	pH	-	7.1
5	Total Suspended Solids	mg/L	127
6	Total Dissolved Solid	mg/L	848
7	Biochemical Oxygen Demand at 27°C	mg/L	9.4
8	Chemical Oxygen Demand	mg/L	5.2
9	Total Residual Chlorine	mg/L	5.8
10	Alkalinity	mg/L	92
11	Calcium	mg/L	38

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

12	Magnesium	mg/L	28.6
13	Total Hardness as CaCO ₃	mg/L	166
14	Electrical Conductivity	μs/cm	185
15	Turbidity	NTU	56.8
16	Arsenic as As	μg/L	ND
17	Lead as Pb	μg/L	0.32
18	Cadmium as Cd	μg/L	0.44
19	Total Chromium as Cr	μg/L	0.36
20	Zinc as Zn	μg/L	0.42
21	Fluoride as F	mg/L	<0.05
22	Iron as Fe	mg/L	44.6
23	Nitrate	mg/L	2.2
24	Sodium as Na	mg/L	16.8
25	Potassium as K	mg/L	2.6
26	Sulfate	mg/L	4
27	Nitrate as NO ₃	mg/L	5.2
28	Total Silica as SiO ₂	mg/L	14.6
29	Total dissolved Solid	mg/L	848

Sampling By: Mr. Hrusikesh Das



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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/04/06/22		Report No.- OCPL/EMIL /04/06/22	
Name & Address of Client	ESSEL MINING & INDUSTRIES LTD P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	DALKI NALA, NEAR PLANT	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	07- June -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	08- June -2022
Sample type	Surface Water	Date of Analysis	08- June -2022
Required parameters	As described in W/O	Date of Issue of report	15- June -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.1
2	Odour	-	Agreeable
3	Temperature	°C	25.8
4	pH	-	7.1
5	Total Suspended Solids	mg/L	29.6
6	Total Dissolved Solid	mg/L	577
7	Biochemical Oxygen Demand at 27°C	mg/L	4.8
8	Chemical Oxygen Demand	mg/L	2.1
9	Total Residual Chlorine	mg/L	0.8
10	Alkalinity	mg/L	75
11	Calcium	mg/L	24.8
12	Magnesium	mg/L	36

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

13	Total Hardness as CaCO ₃	mg/L	35.8
14	Electrical Conductivity	μs/cm	106.5
15	Turbidity	NTU	18
16	Arsenic as As	μg/L	ND
17	Lead as Pb	μg/L	ND
18	Cadmium as Cd	μg/L	ND
19	Total Chromium as Cr	μg/L	0.3
20	Zinc as Zn	μg/L	3.8
21	Fluoride as F	mg/L	0.01
22	Iron as Fe	mg/L	21
23	Nitrate	mg/L	11
24	Sodium as Na	mg/L	6.8
25	Potassium as K	mg/L	2.2
26	Sulfate	mg/L	7.8
27	Nitrate as NO ₃	mg/L	22.6
28	Total Silica as SiO ₂	mg/L	7.6
29	Total dissolved Solid	mg/L	577

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/05/06/22		Report No.- OCPL/EMIL /05/06/22	
Name & Address of Client	ESSEL MINING & INDUSTRIES LTD P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	NAIBHANGA	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	07- June -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	08- June -2022
Sample type	Surface Water	Date of Analysis	08- June -2022
Required parameters	As described in W/O	Date of Issue of report	15- June -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	26.5
4	pH	-	6.8
5	Total Suspended Solids	mg/L	35.2
6	Total Dissolved Solid	mg/L	669
7	Biochemical Oxygen Demand at 27°C	mg/L	5.1
8	Chemical Oxygen Demand	mg/L	2.6
9	Total Residual Chlorine	mg/L	1.2
10	Alkalinity	mg/L	32.8
11	Calcium	mg/L	30.8
12	Magnesium	mg/L	29

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House no 162-C, BDA HIG Duplex Colony, Baramunda
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13	Total Hardness as CaCO ₃	mg/L	27.6
14	Electrical Conductivity	μs/cm	96.8
15	Turbidity	NTU	34.8
16	Arsenic as As	μg/L	ND
17	Lead as Pb	μg/L	0.01
18	Cadmium as Cd	μg/L	<0.5
19	Total Chromium as Cr	μg/L	<0.5
20	Zinc as Zn	μg/L	2.1
21	Fluoride as F	mg/L	0.1
22	Iron as Fe	mg/L	19.6
23	Nitrate	mg/L	1.5
24	Sodium as Na	mg/L	4.2
25	Potassium as K	mg/L	16
26	Sulfate	mg/L	4.4
27	Nitrate as NO ₃	mg/L	5.8
28	Total Silica as SiO ₂	mg/L	4
29	Total dissolved Solid	mg/L	669

Sampling By: Mr. Hrusikesh Das



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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Ground Water - TEST REPORT

Date: 11 -June-2022

Name & address of Client:

ESSEL MINING & INDUSTRIES LTD
P.O. Basantpur, Tahasil- Jhumpura,
Keonjhar, Odisha- 758034

Total no of sample: Five locations.

Sample details: Ground Water

Sample location: ESSEL MINING & INDUSTRIES LTD., Keonjhar, Odisha

Sl. No.	Sample no.	Location details
1	1	JARPADA
2	2	NANDIGUTU
3	3	NAIBHANGA
4	4	PLANT- 1 (Near Canteen)
5	5	PLANT- 2 (Near Tailing Pond)

Sample Ref No.: EMIL/GW/BBSR/346

Report no.: EMIL/BBS/382

Sample description: Ground Water

Date of sample received: 04 -June-2022

Date of Analysis: 05 -June-2022

Date of Issue of report: 11 -June-2022



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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

ANALYSIS RESULT

With drinking water specifications, BIS (As per 10500- 2012 BIS)

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			1:	2:	3:	4:	5:		
1	Colour	Pt-Co	1.1	1.1	1.0	1.0	1.2		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	26.7	28.4	28.1	27.2	27.7		
4	pH	-	7.1	7.2	7.1	6.8	7.4	6.5- 8.5	No relaxation
5	Total Hardness (as CaCO ₃)	mg/L	52.8	48.6	46	48.2	51	300	600
6	Calcium	mg/L	15.2	16	14.8	16.8	15	75	200
7	Magnesium	mg/L	1.6	2.8	2.4	3.1	2.6	30	No relaxation
8	Chloride	mg/L	22.4	22	18.4	14	15.8	250	1000
9	Alkalinity	mg/L	16	21.6	18.4	16.5	20.4	200	600
10	Electrical Conductivity	µs/cm	61.5	52	54.4	48	38.5	--	--
11	Arsenic as As	µg/L	ND	ND	ND	0.01	ND	10	No relaxation
12	Lead as Pb	µg/L	ND	ND	ND	ND	0.22	10	No relaxation
13	Cadmium as Cd	µg/L	0.08	0.14	0.12	0.18	0.02	3.0	No relaxation
14	Total Chromium as Cr	µg/L	0.28	0.42	0.22	0.04	0.34	50	No relaxation
15	Zinc as Zn	µg/L	56.8	46	93	77	72.8	5000	No relaxation
16	Fluoride as F	mg/L	ND	0.06	ND	0.02	ND	1.0	1.9
17	Iron as Fe	µg/L	16.2	20.4	8.8	11	18	300	1000
18	Nitrate	mg/L	0.14	1.2	0.02	0.01	0.46	45	100
19	Sodium as Na	mg/L	2.1	2.2	1.4	2.8	2.45	150	No relaxation
20	Potassium as K	mg/L	ND	ND	ND	0.3	0.06	12	No relaxation
21	Sulfate	mg/L	ND	0.14	0.28	ND	0.9	200	400
22	Total Silica as	mg/L	0.62	0.18	ND	0.42	0.44	--	--

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	SiO ₂								
23	Total suspended Solid	mg/L	0.4	0.82	1.25	1.22	1.6	--	--
24	Total dissolved Solid	mg/L	114	96.8	105	217	144	250	2000
25	Turbidity	NTU	0.28	0.2	0.34	0.48	0.44	5	10

Report prepared by:


Tested By: OCP
Signature
Laboratory In-Charge

*ND= Not Detectable

Standards are as per Government Notification Dtd. 19th June '93.

Sampling & testing has been done as per IS Code 3025.

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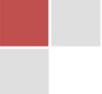
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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

REPORT ON GROUND WATER LEVEL ANALYSIS FOR THE MONTH OF JUNE - 2022

Summary Sheet of Monitoring (Water):

SI No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	JARPADA	03- June-2022	OCPL/GWL/01/06/22
2.	Sample 02	NANDIGUTU	03- June-2022	OCPL/GWL/02/06/22
3.	Sample 03	NAIBHANGA	03- June-2022	OCPL/GWL/03/06/22
4.	Sample 04	PLANT- 1 (Near Canteen)	03- June-2022	OCPL/GWL/04/06/22
5.	Sample 05	PLANT- 2 (Near Tailing pond)	03- June-2022	OCPL/GWL/05/06/22

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

MONITORING RESULT

Sl No.	Name of the location	Type of well	Dia. (m)	Depth of the well (m)	Depth of the water table BGL (M)	Remarks
1	JARPADA	Dugwell	0.8	8.2	6.42	--
2	NANDIGUTU	Dugwell	1.2	9.5	6.65	--
3	NAIBHANGA	Dugwell	1.0	8.6	7.64	--
4	PLANT- 1 (Near Canteen)	Bore-well	0.1	62	12.44	--
5	PLANT- 2 (Near Tailing pond)	Bore-well	0.1	60	44.82	--

Sampling By: Mr. Hrusikesh Das



Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com |

***Monthly Report On
Environmental Monitoring Data
for the Month of July - 2022***

For

M/S ESSEL MINING & INDUSTRIES LTD

P.O. Basantpur, Tahasil- Jhumpura,

Keonjhar, Odisha- 758034

Prepared By:

Orectic Consulting Private Limited

Housing Board Colony, Chandrasekharpur,

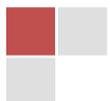
Bhubaneswar- 751024, Odisha.

ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

CONTENTS

Sl. No.	Description	Pages
01	Location & Weekly Monitoring Schedule	01
02	Summary Sheet of Sampling (Ambient Air)	02
03	Ambient Air Monitoring Data	03
04	Noise Level Monitoring Data	09
05	Summary Sheet of Sampling (Water)	10
06	Surface water Analysis Report	11



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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Weekly Ambient Air Monitoring Data Generated

For the Month of July– 2022

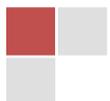
LOCATION AND WEEKLY MONITORING SCHEDULE (FOR JULY- 2022)

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Filter Cake Storage Yard		√				√	
Near Crushing Plant		√				√	
Near Raw Material Stack Yard		√				√	
Nediguth Village		√				√	

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com |



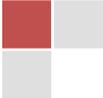
Environmental Monitoring Data for the Month of July– 2022

ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Summary Sheet of Sampling (AAQ):

SI No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Filter cake storage yard	01.07.2022	OCPL/ AAQ/PMPL/01/07/22
2.	Sample 02	Near Crushing Plant	01.07.2022	OCPL/ AAQ/PMPL/02/07/22
3.	Sample 03	Near Raw Material Stack Yard	01.07.2022	OCPL/ AAQ/PMPL/03/07/22
4.	Sample 04	Nedigutha Village	05.07.2022	OCPL/ AAQ/PMPL/04/07/22
5.	Sample 05	Near Filter cake storage yard	04.07.2022	OCPL/ AAQ/PMPL/05/07/22
6.	Sample 06	Near Crushing Plant	04.07.2022	OCPL/ AAQ/PMPL/06/07/22
7.	Sample 07	Near Raw Material Stack Yard	04.07.2022	OCPL/ AAQ/PMPL/07/07/22
8.	Sample 08	Nedigutha Village	12.07.2022	OCPL/ AAQ/PMPL/08/07/22
9.	Sample 09	Near Filter cake storage yard	08.07.2022	OCPL/ AAQ/PMPL/09/07/22
10.	Sample 10	Near Crushing Plant	08.07.2022	OCPL/ AAQ/PMPL/10/07/22
11.	Sample 11	Near Raw Material Stack Yard	08.07.2022	OCPL/ AAQ/PMPL/11/07/22
12.	Sample 12	Nedigutha Village	19.07.2022	OCPL/ AAQ/PMPL/12/07/22
13.	Sample 13	Near Filter cake storage yard	11.07.2022	OCPL/ AAQ/PMPL/13/07/22
14.	Sample 14	Near Crushing Plant	11.07.2022	OCPL/ AAQ/PMPL/14/07/22
15.	Sample 15	Near Raw Material Stack Yard	11.07.2022	OCPL/ AAQ/PMPL/15/07/22
16.	Sample 16	Nedigutha Village	26.07.2022	OCPL/ AAQ/PMPL/16/07/22
17.	Sample 17	Near Filter cake storage yard	15.07.2022	OCPL/ AAQ/PMPL/17/07/22
18.	Sample 18	Near Crushing Plant	15.07.2022	OCPL/ AAQ/PMPL/18/07/22
19.	Sample 19	Near Raw Material Stack Yard	15.07.2022	OCPL/ AAQ/PMPL/19/07/22
20.	Sample 20	Nedigutha Village	16.07.2022	OCPL/ AAQ/PMPL/20/07/22
21.	Sample 21	Near Filter cake storage yard	18.07.2022	OCPL/ AAQ/PMPL/21/07/22
22.	Sample 22	Near Crushing Plant	18.07.2022	OCPL/ AAQ/PMPL/22/07/22
23.	Sample 23	Near Raw Material Stack Yard	18.07.2022	OCPL/ AAQ/PMPL/23/07/22
24.	Sample 24	Near Filter cake storage yard	22.07.2022	OCPL/ AAQ/PMPL/24/07/22
25.	Sample 25	Near Crushing Plant	22.07.2022	OCPL/ AAQ/PMPL/25/07/22
26.	Sample 26	Near Raw Material Stack Yard	22.07.2022	OCPL/ AAQ/PMPL/26/07/22
27.	Sample 27	Near Filter cake storage yard	25.07.2022	OCPL/ AAQ/PMPL/27/07/22
28.	Sample 28	Near Crushing Plant	25.07.2022	OCPL/ AAQ/PMPL/28/07/22
29.	Sample 29	Near Raw Material Stack Yard	25.07.2022	OCPL/ AAQ/PMPL/29/07/22
30.	Sample 30	Near Filter cake storage yard	29.07.2022	OCPL/ AAQ/PMPL/30/07/22
31.	Sample 31	Near Crushing Plant	29.07.2022	OCPL/ AAQ/PMPL/31/07/22
32.	Sample 32	Near Raw Material Stack Yard	29.07.2022	OCPL/ AAQ/PMPL/32/07/22

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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

AMBIENT AIR MONITORING AS PER NAAQ STANDARDS FOR THE MONTH OF JULY-2022

LOCATION: Near Filter Cake Storage Yard

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									
		01.07.22	04.07.22	08.07.22	11.07.22	15.07.22	18.07.22	22.07.22	25.07.22	29.07.22	Avg
PM ₁₀	100	90.4	88.7	88	90.5	84	90.4	87	88.2	87.6	88.31
PM _{2.5}	60	58	59.5	59.4	56	58	59.8	57.4	60	56.9	58.77
Sulphur Dioxide (SO ₂)	80	40.2	42	38	42	38.8	39	41.2	36	37.5	39.41
Oxide of Nitrogen (NO ₂)	80	32.2	30.6	28.4	29	32.5	30.4	28.6	28	27.4	29.67
Lead (Pb)	1	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	176	179.4	180	177	178	175.5	176.9	172	174.6	176.6
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	42.8	39	41	39.6	38	36.2	35	38.4	33.5	38.16
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND								
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, &CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

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Environmental Monitoring Data for the Month of July- 2022



ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

AMBIENT AIR MONITORING AS PER NAAQ STANDARDS

FOR THE MONTH OF JULY-2022

LOCATION: Near Crushing Plant

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									Avg
		01.07.22	04.07.22	08.07.22	11.07.22	15.07.22	18.07.22	22.07.22	25.07.22	29.07.22	
PM ₁₀	100	92.2	88	90.6	87	88.8	90.8	88.2	86	86.7	88.7
PM _{2.5}	60	58.8	58	56.2	57.8	55.8	52.5	54	56.2	50.8	55.56
Sulphur Dioxide (SO ₂)	80	30.8	31.4	26	29.8	27	26.8	24	28.4	24.8	27.66
Oxide of Nitrogen (NO ₂)	80	31.4	28	27.5	28.8	27.6	26	25.8	25	22	26.9
Lead (Pb)	1.0	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	170.2	168.5	166	164.8	164	166.8	168.2	166	162.2	166.3
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	36.6	38	41	36	35.8	35.2	34	34.4	33.8	36.08
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP)	01	ND	ND								
Particulate phase only(ng/m ³)											
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das

Tested By: OGPL



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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

AMBIENT AIR MONITORING AS PER NAAQ STANDARDS

FOR THE MONTH OF JULY-2022

LOCATION: *Near Raw Material Stack Yard*

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									
		01.07.22	04.07.22	08.07.22	11.07.22	15.07.22	18.07.22	22.07.22	25.07.22	29.07.22	Avg
PM ₁₀	100	88.7	86.2	86	85.4	86.8	88	84	87	87.2	86.58
PM _{2.5}	60	59.5	58	59.6	58	58.4	56	55.4	55	54.8	57.63
Sulphur Dioxide (SO ₂)	80	29.6	28.4	25	26.5	24.5	23.4	25	28.2	27.6	26.46
Oxide of Nitrogen (NO ₂)	80	30	30.8	29.4	24.8	26.4	24	25.8	27.4	22	26.73
Lead (Pb)	1.0	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	175.6	172	165.8	170	178.4	170.6	170	168	166.8	170.8
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	41.8	38	36.4	34.4	36.2	35	35.8	32	34.6	36.02
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP)	01	ND	ND								
Particulate phase only(ng/m ³)											
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

AMBIENT AIR MONITORING AS PER NAAQ STANDARDS FOR THE MONTH OF JULY– 2022

LOCATION: Nedigutha Village

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	Date- 05.07.2022	Date- 12.07.2022	Date- 19.07.2022	Date- 26.07.2022	Date- 16.07.2022	Avg.
PM ₁₀	100	48.8	52	50.4	46.2	47	48.88
PM _{2.5}	60	46.6	45	46.8	48.5	46.2	46.62
Sulphur Dioxide (SO ₂)	80	21	18.8	19	20.8	18.6	19.64
Oxide of Nitrogen (NO ₂)	80	21	18.4	17	18.2	17.6	18.44
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO) (8 Hrs)	2000	144	142.8	140.6	138.4	136	140.36
Ozone(O ₃)	180	ND	ND	ND	ND	ND	ND
Ammonia(NH ₃)	400	14.4	15	12.6	12.8	12	13.36
Benzene(C ₆ H ₆)	05	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m ³)	06	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m ³)	20	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182
Part IV, II, VI, X& XVII respectively

Sampling By: Mr. Hrusikesh Das

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House no 162-C, BDA HIG Duplex Colony, Baramunda
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NOISE LEVEL MONITORING RESULT IN dBA

Date of Monitoring: 07.07.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	52.6	61	50.2	45	39.4
2	First-Aid Room	48	51.4	52	45	33.4
3	Security Office	46.2	45	56.4	40.8	36
4	Administrative building	32	36.8	37	31	26
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Sampling By: Mr. Hrusikesh Das



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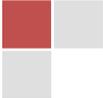
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Bhubaneswar, Odisha

REPORT ON SURFACE WATER ANALYSIS FOR THE MONTH OF JULY - 2022

Summary Sheet of Sampling (Water):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	JARPADA	06- July -2022	OCPL/SW/01/07/22
2.	Sample 02	NANDIGUTU	06- July -2022	OCPL/SW/02/07/22
3.	Sample 03	RESERVOUR POND INSIDE PLANT	06- July -2022	OCPL/SW/03/07/22
4.	Sample 04	DALKI NALA NEAR PLANT	06- July -2022	OCPL/SW/04/07/22
5.	Sample 05	NAIBHANGA	06- July -2022	OCPL/SW/05/07/22

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/01/07/22		Report No.- OCPL/PMPL/01/07/22	
Name & Address of Client	PRO MINERALS PRIVATE LIMITED P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	JARPADA	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	06- July -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	07- July -2022
Sample type	Surface Water	Date of Analysis	07- July -2022
Required parameters	As described in W/O	Date of Issue of report	12- July -2022
PMPL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	24.8
4	pH	-	7.1
5	Total Suspended Solids	mg/L	52
6	Total Dissolved Solid	mg/L	847
7	Biochemical Oxygen Demand at 27°C	mg/L	5
8	Chemical Oxygen Demand	mg/L	1.8
9	Total Residual Chlorine	mg/L	1.1
10	Alkalinity	mg/L	126
11	Calcium	mg/L	42.7

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12	Magnesium	mg/L	32.6
13	Total Hardness as CaCO ₃	mg/L	53
14	Electrical Conductivity	µs/cm	134
15	Turbidity	NTU	9.6
16	Arsenic as As	µg/L	0.11
17	Lead as Pb	µg/L	<0.5
18	Cadmium as Cd	µg/L	0.02
19	Total Chromium as Cr	µg/L	0.18
20	Zinc as Zn	µg/L	0.88
21	Fluoride as F	mg/L	<0.05
22	Iron as Fe	mg/L	16.8
23	Nitrate	mg/L	1.8
24	Sodium as Na	mg/L	2.2
25	Potassium as K	mg/L	2.5
26	Sulfate	mg/L	1.4
27	Nitrate as NO ₃	mg/L	2.8
28	Total Silica as SiO ₂	mg/L	6.2
29	Total dissolved Solid	mg/L	847

Sampling By: Mr. Hrusikesh Das

Tested By: QCPL



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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
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Lab Sample Code: OCPL/SW/02/07/22		Report No.- OCPL/PMPL/02/07/22	
Name & Address of Client	PRO MINERALS PRIVATE LIMITED P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	NANDIGUTU	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	06- July -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	07- July -2022
Sample type	Surface Water	Date of Analysis	07- July -2022
Required parameters	As described in W/O	Date of Issue of report	12- July -2022
PMPL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.4
2	Odour	-	Agreeable
3	Temperature	°C	25.5
4	pH	-	6.9
5	Total Suspended Solids	mg/L	34
6	Total Dissolved Solid	mg/L	724
7	Biochemical Oxygen Demand at 27°C	mg/L	3.6
8	Chemical Oxygen Demand	mg/L	2.4
9	Total Residual Chlorine	mg/L	1.22
10	Alkalinity	mg/L	46
11	Calcium	mg/L	26.5

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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

12	Magnesium	mg/L	28.2
13	Total Hardness as CaCO ₃	mg/L	40
14	Electrical Conductivity	µs/cm	91.5
15	Turbidity	NTU	21.6
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	<0.05
19	Total Chromium as Cr	µg/L	<0.04
20	Zinc as Zn	µg/L	0.2
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	28.8
23	Nitrate	mg/L	3.2
24	Sodium as Na	mg/L	2.8
25	Potassium as K	mg/L	0.06
26	Sulfate	mg/L	<0.01
27	Nitrate as NO ₃	mg/L	2.2
28	Total Silica as SiO ₂	mg/L	5.1
29	Total dissolved Solid	mg/L	724

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/03/07/22		Report No.- OCPL/PMPL/03/07/22	
Name & Address of Client	PRO MINERALS PRIVATE LIMITED P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	RESERVOUR POND INSIDE PROMINERALS PLANT PREMISES	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	06- July -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	07- July -2022
Sample type	Surface Water	Date of Analysis	07- July -2022
Required parameters	As described in W/O	Date of Issue of report	12- July -2022
PMPL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.5
2	Odour	-	Agreeable
3	Temperature	°C	25.2
4	pH	-	7.2
5	Total Suspended Solids	mg/L	144
6	Total Dissolved Solid	mg/L	886
7	Biochemical Oxygen Demand at 27°C	mg/L	8.4
8	Chemical Oxygen Demand	mg/L	4.6
9	Total Residual Chlorine	mg/L	5.2
10	Alkalinity	mg/L	84.5

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

11	Calcium	mg/L	38.8
12	Magnesium	mg/L	31.2
13	Total Hardness as CaCO ₃	mg/L	141
14	Electrical Conductivity	µs/cm	188.8
15	Turbidity	NTU	58
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	0.06
19	Total Chromium as Cr	µg/L	0.2
20	Zinc as Zn	µg/L	0.02
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	34.2
23	Nitrate	mg/L	2.4
24	Sodium as Na	mg/L	14
25	Potassium as K	mg/L	1.8
26	Sulfate	mg/L	3.4
27	Nitrate as NO ₃	mg/L	4.2
28	Total Silica as SiO ₂	mg/L	16.3
29	Total dissolved Solid	mg/L	886

Sampling By: Mr. Hrusikesh Das



Tested By: OCPL

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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/04/07/22		Report No.- OCPL/PMPL/04/07/22	
Name & Address of Client	PRO MINERALS PRIVATE LIMITED P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	DALKI NALA, NEAR PLANT	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	06- July -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	07- July -2022
Sample type	Surface Water	Date of Analysis	07- July -2022
Required parameters	As described in W/O	Date of Issue of report	12- July -2022
PMPL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.6
2	Odour	-	Agreeable
3	Temperature	°C	25.1
4	pH	-	7.3
5	Total Suspended Solids	mg/L	32
6	Total Dissolved Solid	mg/L	642
7	Biochemical Oxygen Demand at 27°C	mg/L	5.1
8	Chemical Oxygen Demand	mg/L	2.6
9	Total Residual Chlorine	mg/L	0.4
10	Alkalinity	mg/L	62
11	Calcium	mg/L	28.4
12	Magnesium	mg/L	39.2

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House no 162-C, BDA HIG Duplex Colony, Baramunda
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13	Total Hardness as CaCO ₃	mg/L	38.2
14	Electrical Conductivity	μs/cm	112.5
15	Turbidity	NTU	19.8
16	Arsenic as As	μg/L	ND
17	Lead as Pb	μg/L	ND
18	Cadmium as Cd	μg/L	ND
19	Total Chromium as Cr	μg/L	0.04
20	Zinc as Zn	μg/L	1.8
21	Fluoride as F	mg/L	0.04
22	Iron as Fe	mg/L	26.4
23	Nitrate	mg/L	14.2
24	Sodium as Na	mg/L	7.2
25	Potassium as K	mg/L	2.6
26	Sulfate	mg/L	8.2
27	Nitrate as NO ₃	mg/L	24
28	Total Silica as SiO ₂	mg/L	7.8
29	Total dissolved Solid	mg/L	642

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



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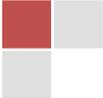
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House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

Lab Sample Code: OCPL/SW/05/07/22		Report No.- OCPL/PMPL/05/07/22	
Name & Address of Client	PRO MINERALS PRIVATE LIMITED P.O. Basantpur, Tahasil- Jhumpura, Keonjhar, Odisha- 758034		
Sample description:		Test method	APHA 22 nd edition
Sample location	NAIBHANGA	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	06- July -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	07- July -2022
Sample type	Surface Water	Date of Analysis	07- July -2022
Required parameters	As described in W/O	Date of Issue of report	12- July -2022
PMPL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.4
2	Odour	-	Agreeable
3	Temperature	°C	24.8
4	pH	-	7.2
5	Total Suspended Solids	mg/L	38
6	Total Dissolved Solid	mg/L	794
7	Biochemical Oxygen Demand at 27°C	mg/L	4.8
8	Chemical Oxygen Demand	mg/L	2.2
9	Total Residual Chlorine	mg/L	14
10	Alkalinity	mg/L	34
11	Calcium	mg/L	34.4
12	Magnesium	mg/L	31.8

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House no 162-C, BDA HIG Duplex Colony, Baramunda
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13	Total Hardness as CaCO ₃	mg/L	32.6
14	Electrical Conductivity	μs/cm	108.2
15	Turbidity	NTU	38.4
16	Arsenic as As	μg/L	ND
17	Lead as Pb	μg/L	0.01
18	Cadmium as Cd	μg/L	ND
19	Total Chromium as Cr	μg/L	0.02
20	Zinc as Zn	μg/L	1.82
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	24.2
23	Nitrate	mg/L	1.8
24	Sodium as Na	mg/L	4.5
25	Potassium as K	mg/L	12.8
26	Sulfate	mg/L	4.2
27	Nitrate as NO ₃	mg/L	5.1
28	Total Silica as SiO ₂	mg/L	6.4
29	Total dissolved Solid	mg/L	794

Sampling By: Mr. Hrusikesh Das



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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

REPORT ON GROUND WATER LEVEL ANALYSIS FOR THE MONTH OF JULY - 2022

Summary Sheet of Monitoring (Water):

SI No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	JARPADA	16- July-2022	OCPL/GWL/01/07/22
2.	Sample 02	NANDIGUTU	16- July-2022	OCPL/GWL/02/07/22
3.	Sample 03	NAIBHANGA	16- July-2022	OCPL/GWL/03/07/22
4.	Sample 04	PRO MINERALS PLANT- 1 (Near Canteen)	16- July-2022	OCPL/GWL/04/07/22
5.	Sample 05	PRO MINERALS PLANT- 2 (Near Tailing pond)	16- July-2022	OCPL/GWL/05/07/22

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ORECTIC CONSULTING PRIVATE LIMITED

House no 162-C, BDA HIG Duplex Colony, Baramunda
Bhubaneswar, Odisha

MONITORING RESULT

Sl No.	Name of the location	Type of well	Dia. (m)	Depth of the well (m)	Depth of the water table BGL (M)	Remarks
1	JARPADA	Dugwell	0.8	8.2	6.82	--
2	NANDIGUTU	Dugwell	1.2	9.5	6.95	--
3	NAIBHANGA	Dugwell	1.0	8.6	7.98	--
4	PRO MINERALS PLANT- 1 (Near Canteen)	Bore-well	0.1	62	12.86	--
5	PRO MINERALS PLANT- 2 (Near Tailing pond)	Bore-well	0.1	60	45.2	--

Sampling By: Mr. Hrusikesh Das



Mobile Number - 9439115280. 09853120125|| Email ID - info@orecticconsulting.com |

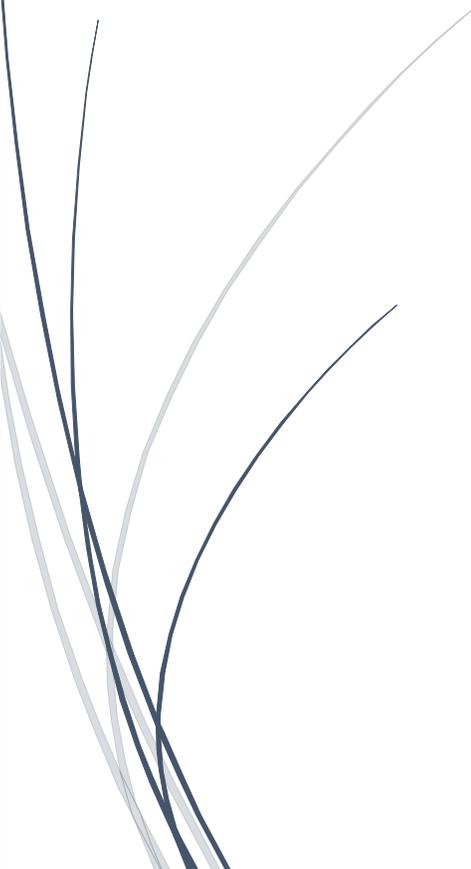




8/10/2022

Monthly Report on Environmental Monitoring

FOR M/S ESSEL MINING & INDUSTRIES LTD



M/S ESSEL MINING & INDUSTRIES LTD.

VILL- BASANTPUR, PO-DUBUNA, TEHSIL-JHUMPURA, KEONJHAR

Contents

AMBIENT AIR MONITORING DATA	3
LOCATION AND WEEKLY MONITORING SCHEDULE	3
SUMMARY SHEET OF SAMPLING	3
LOCATION: Near Filter Cake Storage Yard	5
LOCATION: Near Crushing Plant	6
LOCATION: Near Raw Material Stack Yard	7
LOCATION: Nedigutha Village	8
NOISE LEVEL MONITORING RESULT IN dBA	9
LOCATION AND WEEKLY MONITORING SCHEDULE	9
SUMMARY SHEET OF SAMPLING	9
Date of Monitoring: 03.08.2022	11
Date of Monitoring: 06.08.2022	12
Date of Monitoring: 10.08.2022	13
Date of Monitoring: 13.08.2022	14
Date of Monitoring: 17.08.2022	15
Date of Monitoring: 20.08.2022	16
Date of Monitoring: 24.08.2022	17
Date of Monitoring: 27.08.2022	18
Date of Monitoring: 31.08.2022	19
SURFACE WATER ANALYSIS FOR THE MONTH OF AUGUST – 2022	20
SUMMARY SHEET OF SAMPLING (SURFACE WATER):	20
Location: JARPADA	21
Location: NANDIGUTU	23
Location: RESERVOUR POND INSIDE PLANT PREMISES	25
Location: DALKI NALA, NEAR PLANT	27
Location: NAIBHANGA	29
GROUND WATER MONITORING REPORT	31
SUMMARY SHEET OF SAMPLING (GROUND WATER):	31
ANALYSIS RESULT	31
REPORT ON GROUND WATER LEVEL ANALYSIS FOR THE MONTH OF AUGUST – 2022	33
SUMMARY SHEET OF MONITORING:	33
MONITORING RESULT	33

AMBIENT AIR MONITORING DATA

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Filter Cake Storage Yard		√			√		
Near Crushing Plant		√			√		
Near Raw Material Stack Yard		√			√		
Nediguth Village			√			√	

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Filter cake storage yard	01.08.2022	OCPL/ AAQ/EMIL/01/08/22
2.	Sample 02	Near Crushing Plant	01.08.2022	OCPL/ AAQ/EMIL/02/08/22
3.	Sample 03	Near Raw Material Stack Yard	01.08.2022	OCPL/ AAQ/EMIL/03/08/22
4.	Sample 04	Nedigutha Village	02.08.2022	OCPL/ AAQ/EMIL/04/08/22
5.	Sample 05	Near Filter cake storage yard	04.08.2022	OCPL/ AAQ/EMIL/05/08/22
6.	Sample 06	Near Crushing Plant	04.08.2022	OCPL/ AAQ/EMIL/06/08/22
7.	Sample 07	Near Raw Material Stack Yard	04.08.2022	OCPL/ AAQ/EMIL/07/08/22
8.	Sample 08	Nedigutha Village	05.08.2022	OCPL/ AAQ/EMIL/08/08/22
9.	Sample 09	Near Filter cake storage yard	08.08.2022	OCPL/ AAQ/EMIL/09/08/22
10.	Sample 10	Near Crushing Plant	08.08.2022	OCPL/ AAQ/EMIL/10/08/22
11.	Sample 11	Near Raw Material Stack Yard	08.08.2022	OCPL/ AAQ/EMIL/11/08/22
12.	Sample 12	Nedigutha Village	09.08.2022	OCPL/ AAQ/EMIL/12/08/22
13.	Sample 13	Near Filter cake storage yard	11.08.2022	OCPL/ AAQ/EMIL/13/08/22
14.	Sample 14	Near Crushing Plant	11.08.2022	OCPL/ AAQ/EMIL/14/08/22
15.	Sample 15	Near Raw Material Stack Yard	11.08.2022	OCPL/ AAQ/EMIL/15/08/22
16.	Sample 16	Nedigutha Village	12.08.2022	OCPL/ AAQ/EMIL/16/08/22

17.	Sample 17	Near Filter cake storage yard	16.08.2022	OCPL/ AAQ/EMIL/17/08/22
18.	Sample 18	Near Crushing Plant	16.08.2022	OCPL/ AAQ/EMIL/18/08/22
19.	Sample 19	Near Raw Material Stack Yard	16.08.2022	OCPL/ AAQ/EMIL/19/08/22
20.	Sample 20	Nedigutha Village	17.08.2022	OCPL/ AAQ/EMIL/20/08/22
21.	Sample 21	Near Filter cake storage yard	18.08.2022	OCPL/ AAQ/EMIL/21/08/22
22.	Sample 22	Near Crushing Plant	18.08.2022	OCPL/ AAQ/EMIL/22/08/22
23.	Sample 23	Near Raw Material Stack Yard	18.08.2022	OCPL/ AAQ/EMIL/23/08/22
24.	Sample 24	Nedigutha Village	19.08.2022	OCPL/ AAQ/EMIL/24/08/22
25.	Sample 25	Near Filter cake storage yard	22.08.2022	OCPL/ AAQ/EMIL/25/08/22
26.	Sample 26	Near Crushing Plant	22.08.2022	OCPL/ AAQ/EMIL/26/08/22
27.	Sample 27	Near Raw Material Stack Yard	22.08.2022	OCPL/ AAQ/EMIL/27/08/22
28.	Sample 28	Nedigutha Village	23.08.2022	OCPL/ AAQ/EMIL/28/08/22
29.	Sample 29	Near Filter cake storage yard	25.08.2022	OCPL/ AAQ/EMIL/29/08/22
30.	Sample 30	Near Crushing Plant	25.08.2022	OCPL/ AAQ/EMIL/30/08/22
31.	Sample 31	Near Raw Material Stack Yard	25.08.2022	OCPL/ AAQ/EMIL/31/08/22
32.	Sample 32	Nedigutha Village	26.08.2022	OCPL/ AAQ/EMIL/32/08/22
33.	Sample 33	Near Filter cake storage yard	29.08.2022	OCPL/ AAQ/EMIL/33/08/22
34.	Sample 34	Near Crushing Plant	29.08.2022	OCPL/ AAQ/EMIL/34/08/22
35.	Sample 35	Near Raw Material Stack Yard	29.08.2022	OCPL/ AAQ/EMIL/35/08/22
36.	Sample 36	Nedigutha Village	30.08.2022	OCPL/ AAQ/EMIL/36/08/22

LOCATION: Near Filter Cake Storage Yard

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	Date									Avg
		01.08.22	04.08.22	08.08.22	11.08.22	16.08.22	18.08.22	22.08.22	25.08.22	29.08.22	
PM ₁₀	100	84.6	86.8	86	90	88.2	86	88	85.4	84.6	86.62
PM _{2.5}	60	55.8	56	52.4	54.8	55.7	58	56.4	60	57.2	56.36
Sulphur Dioxide (SO ₂)	80	38.5	36	37.8	42	35.4	36.7	38	39.4	37	37.86
Oxide of Nitrogen (NO ₂)	80	30.4	28	26.6	28.2	24	28.9	30.4	26.6	27	27.78
Lead (Pb)	1	ND	ND								
Carbon Monoxide (CO) (8 Hrs)	2000	177.2	171.8	174.5	178	168.4	170.2	172.3	177.6	169	173.22
Ozone(O ₃)	180	ND	ND								
Ammonia (NH ₃)	400	35.6	36	34.8	32.9	28.2	31	32.4	30.9	29.8	32.4
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND								
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel (Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182 Part

IV, II, VI, X& XVII respectively



LOCATION: Near Crushing Plant

Parameters	Limit (µg/ M ³)	DATE									
		01.08.22	04.08.22	08.08.22	11.08.22	16.08.22	18.08.22	22.08.22	25.08.22	29.08.22	Avg
PM ₁₀	100	88.4	89.6	85.4	86	81.4	84.7	85	82.8	84	85.25
PM _{2.5}	60	54.6	52.6	54	56.4	48.3	50.6	52	54.4	50.2	52.56
Sulphur Dioxide (SO ₂)	80	26.6	28	24.9	25.2	21	22.4	24.8	26	27.2	25.12
Oxide of Nitrogen (NO ₂)	80	22.5	22	24.2	23.7	18	22.2	21.6	23.6	21.2	22.11
Lead (Pb)	1.0	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	162.8	160.4	165	165.4	155.4	159	161.2	164	158.4	161.28
Ozone(O ₃)	180	ND	ND								
Ammonia(N H ₃)	400	32	34.2	38.4	34.6	29.6	28	31.7	32.2	31.4	32.45
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND								
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively



LOCATION: Near Raw Material Stack Yard

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									
		01.08.22	04.08.22	08.08.22	11.08.22	16.08.22	18.08.22	22.08.22	25.08.22	29.08.22	Avg
PM ₁₀	100	86	88.2	85	85.6	80.4	79.8	81	82.6	82	83.4
PM _{2.5}	60	58	56.4	55.2	56.6	58.2	60	60	59	58.4	57.71
Sulphur Dioxide (SO ₂)	80	28	26.4	31.2	28	22	26.2	24.4	29	25.5	26.74
Oxide of Nitrogen (NO ₂)	80	25.8	26	28.4	24	20.4	21.8	26	26.8	27.2	25.15
Lead (Pb)	1.0	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	174.2	168.4	166	170.5	154.8	162.7	165	167.2	160.9	165.5
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	34	36.2	30	30.8	24.4	28	28.7	30.4	30	30.27
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND								
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively



LOCATION: Nedigutha Village

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									
		02.08.22	05.08.22	09.08.22	12.08.22	17.08.22	19.08.22	23.08.22	26.08.22	30.08.22	Avg
PM ₁₀	100	46	48.2	44	46.6	44.4	48.6	48.9	48.7	48.1	47.05
PM _{2.5}	60	44.8	46	42.5	44.8	45.2	45.6	45.6	44.9	44.2	44.84
Sulphur Dioxide (SO ₂)	80	20.4	21	15	18.6	20	18.6	18.5	18.6	19.7	18.93
Oxide of Nitrogen (NO ₂)	80	18	17.8	14	16.2	16.5	17.9	18.6	18.1	17.6	17.18
Lead (Pb)	1.0	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	132	142.2	134.6	136	138.2	140.2	139.6	141.3	140.6	138.3
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	14	12.6	10.4	11.5	11.8	14.34	13.28	12.92	13.32	12.68
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND								
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 &Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, &CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively



NOISE LEVEL MONITORING RESULT IN dBA

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Beneficiation Plant Establishment Area	√			√			
First-Aid Room	√			√			
Security Office	√			√			
Administrative building	√			√			

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Beneficiation Plant Establishment Area	03.08.2022	OCPL/ NL/EMIL/01/08/22
2.	Sample 02	First-Aid Room	03.08.2022	OCPL/ NL/EMIL/02/08/22
3.	Sample 03	Security Office	03.08.2022	OCPL/ NL/EMIL/03/08/22
4.	Sample 04	Administrative building	03.08.2022	OCPL/ NL/EMIL/04/08/22
5.	Sample 05	Near Beneficiation Plant Establishment Area	07.08.2022	OCPL/ NL/EMIL/05/08/22
6.	Sample 06	First-Aid Room	07.08.2022	OCPL/ NL/EMIL/06/08/22
7.	Sample 07	Security Office	07.08.2022	OCPL/ NL/EMIL/07/08/22
8.	Sample 08	Administrative building	07.08.2022	OCPL/ NL/EMIL/08/08/22
9.	Sample 09	Near Beneficiation Plant Establishment Area	10.08.2022	OCPL/ NL/EMIL/09/08/22
10.	Sample 10	First-Aid Room	10.08.2022	OCPL/ NL/EMIL/10/08/22
11.	Sample 11	Security Office	10.08.2022	OCPL/ NL/EMIL/11/08/22
12.	Sample 12	Administrative building	10.08.2022	OCPL/ NL/EMIL/12/08/22
13.	Sample 13	Near Beneficiation Plant Establishment Area	14.08.2022	OCPL/ NL/EMIL/13/08/22
14.	Sample 14	First-Aid Room	14.08.2022	OCPL/ NL/EMIL/14/08/22
15.	Sample 15	Security Office	14.08.2022	OCPL/ NL/EMIL/15/08/22
16.	Sample 16	Administrative building	14.08.2022	OCPL/ NL/EMIL/16/08/22
17.	Sample 17	Near Beneficiation Plant Establishment Area	17.08.2022	OCPL/ NL/EMIL/17/08/22
18.	Sample 18	First-Aid Room	17.08.2022	OCPL/ NL/EMIL/18/08/22
19.	Sample 19	Security Office	17.08.2022	OCPL/ NL/EMIL/19/08/22
20.	Sample 20	Administrative building	17.08.2022	OCPL/ NL/EMIL/20/08/22
21.	Sample 21	Near Beneficiation Plant Establishment Area	21.08.2022	OCPL/ NL/EMIL/21/08/22
22.	Sample 22	First-Aid Room	21.08.2022	OCPL/ NL/EMIL/22/08/22
23.	Sample 23	Security Office	21.08.2022	OCPL/ NL/EMIL/23/08/22

24.	Sample 24	Administrative building	21.08.2022	OCPL/ NL/EMIL/24/08/22
25.	Sample 25	Near Beneficiation Plant Establishment Area	24.08.2022	OCPL/ NL/EMIL/25/08/22
26.	Sample 26	First-Aid Room	24.08.2022	OCPL/ NL/EMIL/26/08/22
27.	Sample 27	Security Office	24.08.2022	OCPL/ NL/EMIL/27/08/22
28.	Sample 28	Administrative building	24.08.2022	OCPL/ NL/EMIL/28/08/22
29.	Sample 29	Near Beneficiation Plant Establishment Area	28.08.2022	OCPL/ NL/EMIL/29/08/22
30.	Sample 30	First-Aid Room	28.08.2022	OCPL/ NL/EMIL/30/08/22
31.	Sample 31	Security Office	28.08.2022	OCPL/ NL/EMIL/31/08/22
32.	Sample 32	Administrative building	28.08.2022	OCPL/ NL/EMIL/32/08/22
33.	Sample 33	Near Beneficiation Plant Establishment Area	31.08.2022	OCPL/ NL/EMIL/33/08/22
34.	Sample 34	First-Aid Room	31.08.2022	OCPL/ NL/EMIL/34/08/22
35.	Sample 35	Security Office	31.08.2022	OCPL/ NL/EMIL/35/08/22
36.	Sample 36	Administrative building	31.08.2022	OCPL/ NL/EMIL/36/08/22

Date of Monitoring: 03.08.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	54.8	66.6	68	58	36.9
2	First-Aid Room	51.2	57.9	56.3	46.8	35
3	Security Office	48	55.2	55	40.1	28.4
4	Administrative building	30	35	34	29.8	26
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 07.08.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	55.3	66	68.9	58.9	41.7
2	First-Aid Room	48.7	60	54	46.1	32.4
3	Security Office	44	58	51.7	45.7	33.8
4	Administrative building	32.9	34	38	28.8	23.5
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 10.08.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	58	69	65.8	48.8	32
2	First-Aid Room	46.4	56.2	56	44.6	32.4
3	Security Office	44	54	55.1	44.8	36
4	Administrative building	30	30.3	31.4	27	21
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 14.08.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	55	66.1	58	48.9	32
2	First-Aid Room	46.9	57.7	54	45.7	36.4
3	Security Office	44	49	51.3	44	45
4	Administrative building	32.2	34	35	26	21.8
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 17.08.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	53.4	66.4	65.8	50.4	36.5
2	First-Aid Room	48.6	54.5	53.9	46.6	27.8
3	Security Office	42.4	46	51	40.2	25.4
4	Administrative building	28.8	32	35.4	29	21.2
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 21.08.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00- 11.00am	Day 3.00- 4.00pm	Evening 6.00-7.00 pm	Night 10.00- 11.00 pm
1	Near Beneficiation Plant Establishment Area	55.8	65.1	50.2	48	39.4
2	First-Aid Room	48.5	52.8	52	45	35.4
3	Security Office	46.2	45	54.2	40.8	36
4	Administrative building	35.9	36.8	37	32	27.3
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 24.08.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	56.3	64	60	58	46.2
2	First-Aid Room	54.8	50.6	47.4	41.7	32
3	Security Office	58	54.7	52	46.5	28.4
4	Administrative building	31.5	35	34	30.1	24.5
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 28.08.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	56.6	66.1	56.2	48	36
2	First-Aid Room	44.6	51.5	52	45.6	30.5
3	Security Office	46.8	40	54	42.7	31
4	Administrative building	35	39	32.8	29.2	28.5
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 31.08.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	50	62.4	53.6	48	41.5
2	First-Aid Room	52.6	54.2	48	42.5	30.2
3	Security Office	54	56.5	50.8	44	32
4	Administrative building	35	34.4	36.2	29.8	25.8
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



SURFACE WATER ANALYSIS FOR THE MONTH OF AUGUST – 2022

SUMMARY SHEET OF SAMPLING (SURFACE WATER):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	JARPADA	05- August -2022	OCPL/SW/01/08/22
2.	Sample 02	NANDIGUTU	05- August -2022	OCPL/SW/02/08/22
3.	Sample 03	RESERVOUR POND INSIDE PLANT	05- August -2022	OCPL/SW/03/08/22
4.	Sample 04	DALKI NALA NEAR PLANT	05- August -2022	OCPL/SW/04/08/22
5.	Sample 05	NAIBHANGA	05- August -2022	OCPL/SW/05/08/22

Location: JARPADA

Lab Sample Code: OCPL/SW/01/08/22		Report No.- OCPL/EMIL/01/08/22	
Sample description:		Test method	APHA 22 nd edition
Sample location	JARPADA	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	05- August -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- August -2022
Sample type	Surface Water	Date of Analysis	06- August -2022
Required parameters	As described in W/O	Date of Issue of report	12- August -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	24
4	pH	-	6.8
5	Total Suspended Solids	mg/L	65.8
6	Total Dissolved Solid	mg/L	886
7	Biochemical Oxygen Demand at 27°C	mg/L	6.1
8	Chemical Oxygen Demand	mg/L	1.4
9	Total Residual Chlorine	mg/L	0.84
10	Alkalinity	mg/L	106
11	Calcium	mg/L	44
12	Magnesium	mg/L	34.4
13	Total Hardness as CaCO ₃	mg/L	46.8
14	Electrical Conductivity	µs/cm	149
15	Turbidity	NTU	11.4
16	Arsenic as As	µg/L	<0.05

17	Lead as Pb	µg/L	<0.05
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	0.28
20	Zinc as Zn	µg/L	0.9
21	Fluoride as F	mg/L	<0.05
22	Iron as Fe	mg/L	14.8
23	Nitrate	mg/L	1.4
24	Sodium as Na	mg/L	3.6
25	Potassium as K	mg/L	3.2
26	Sulfate	mg/L	1.6
27	Nitrate as NO ₃	mg/L	3.3
28	Total Silica as SiO ₂	mg/L	5.8
29	Total dissolved Solid	mg/L	886

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



Location: NANDIGUTU

Lab Sample Code: OCPL/SW/02/08/22		Report No.- OCPL/EMIL/02/08/22	
Sample description:		Test method	APHA 22 nd edition
Sample location	NANDIGUTU	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	05- August -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- August -2022
Sample type	Surface Water	Date of Analysis	06- August -2022
Required parameters	As described in W/O	Date of Issue of report	12- August -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.6
2	Odour	-	Agreeable
3	Temperature	°C	24.2
4	pH	-	6.9
5	Total Suspended Solids	mg/L	38.2
6	Total Dissolved Solid	mg/L	769
7	Biochemical Oxygen Demand at 27°C	mg/L	3.2
8	Chemical Oxygen Demand	mg/L	2.6
9	Total Residual Chlorine	mg/L	0.8
10	Alkalinity	mg/L	38
11	Calcium	mg/L	30.2
12	Magnesium	mg/L	39.6
13	Total Hardness as CaCO ₃	mg/L	34.8
14	Electrical Conductivity	µs/cm	88.6
15	Turbidity	NTU	26

16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	<0.05
19	Total Chromium as Cr	µg/L	<0.05
20	Zinc as Zn	µg/L	1.04
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	26.4
23	Nitrate	mg/L	2.8
24	Sodium as Na	mg/L	2.1
25	Potassium as K	mg/L	0.14
26	Sulfate	mg/L	<0.01
27	Nitrate as NO ₃	mg/L	2.4
28	Total Silica as SiO ₂	mg/L	5.8
29	Total dissolved Solid	mg/L	769

Sampling By: Mr. Hrusikesh Das



Location: RESERVOUR POND INSIDE PLANT PREMISES

Lab Sample Code: OCPL/SW/03/08/22		Report No.- OCPL/EMIL/03/08/22	
Sample description:		Test method	APHA 22 nd edition
Sample location	RESERVOUR POND INSIDE PLANT PREMISES	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	05- August -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- August -2022
Sample type	Surface Water	Date of Analysis	06- August -2022
Required parameters	As described in W/O	Date of Issue of report	12- August -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.6
2	Odour	-	Agreeable
3	Temperature	°C	23.8
4	pH	-	6.8
5	Total Suspended Solids	mg/L	156.8
6	Total Dissolved Solid	mg/L	1053
7	Biochemical Oxygen Demand at 27°C	mg/L	10.2
8	Chemical Oxygen Demand	mg/L	5.2
9	Total Residual Chlorine	mg/L	3.6
10	Alkalinity	mg/L	82
11	Calcium	mg/L	42.4
12	Magnesium	mg/L	34
13	Total Hardness as CaCO ₃	mg/L	156
14	Electrical Conductivity	µs/cm	194.2

15	Turbidity	NTU	56.8
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	0.02
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	<0.05
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	32.8
23	Nitrate	mg/L	3.2
24	Sodium as Na	mg/L	16
25	Potassium as K	mg/L	2.2
26	Sulfate	mg/L	4.3
27	Nitrate as NO ₃	mg/L	3.88
28	Total Silica as SiO ₂	mg/L	16.5
29	Total dissolved Solid	mg/L	1053

Sampling By: Mr. Hrusikesh Das



Location: DALKI NALA, NEAR PLANT

Lab Sample Code: OCPL/SW/04/08/22		Report No.- OCPL/EMIL/04/08/22	
Sample description:		Test method	APHA 22 nd edition
Sample location	DALKI NALA, NEAR PLANT	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	05- August -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- August -2022
Sample type	Surface Water	Date of Analysis	06- August -2022
Required parameters	As described in W/O	Date of Issue of report	12- August -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.82
2	Odour	-	Agreeable
3	Temperature	°C	23.6
4	pH	-	7.1
5	Total Suspended Solids	mg/L	38
6	Total Dissolved Solid	mg/L	716
7	Biochemical Oxygen Demand at 27°C	mg/L	4.8
8	Chemical Oxygen Demand	mg/L	2.2
9	Total Residual Chlorine	mg/L	0.2
10	Alkalinity	mg/L	58
11	Calcium	mg/L	24.6
12	Magnesium	mg/L	42
13	Total Hardness as CaCO ₃	mg/L	36
14	Electrical Conductivity	µs/cm	96.8
15	Turbidity	NTU	22.4

16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	<0.02
20	Zinc as Zn	µg/L	1.2
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	25.7
23	Nitrate	mg/L	18
24	Sodium as Na	mg/L	6.8
25	Potassium as K	mg/L	3.2
26	Sulfate	mg/L	7.5
27	Nitrate as NO ₃	mg/L	28.2
28	Total Silica as SiO ₂	mg/L	8.2
29	Total dissolved Solid	mg/L	716

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



Location: NAIBHANGA

Lab Sample Code: OCPL/SW/05/08/22		Report No.- OCPL/EMIL/05/08/22	
Sample description:		Test method	APHA 22 nd edition
Sample location	NAIBHANGA	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	05- August -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- August -2022
Sample type	Surface Water	Date of Analysis	06- August -2022
Required parameters	As described in W/O	Date of Issue of report	12- August -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.8
2	Odour	-	Agreeable
3	Temperature	°C	23.8
4	pH	-	6.8
5	Total Suspended Solids	mg/L	46.5
6	Total Dissolved Solid	mg/L	847
7	Biochemical Oxygen Demand at 27°C	mg/L	3.8
8	Chemical Oxygen Demand	mg/L	1.2
9	Total Residual Chlorine	mg/L	0.8
10	Alkalinity	mg/L	26
11	Calcium	mg/L	36.5
12	Magnesium	mg/L	38
13	Total Hardness as CaCO ₃	mg/L	28.7
14	Electrical Conductivity	µs/cm	124
15	Turbidity	NTU	41.6

16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	1.2
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	26.4
23	Nitrate	mg/L	2.1
24	Sodium as Na	mg/L	4.1
25	Potassium as K	mg/L	14.6
26	Sulfate	mg/L	3.7
27	Nitrate as NO ₃	mg/L	5.8
28	Total Silica as SiO ₂	mg/L	5.2
29	Total dissolved Solid	mg/L	847

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



GROUND WATER MONITORING REPORT

SUMMARY SHEET OF SAMPLING (GROUND WATER):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	JARPADA	11- August -2022	OCPL/SW/01/08/22
2.	Sample 02	NANDIGUTU	11- August -2022	OCPL/SW/02/08/22
3.	Sample 03	NAIBHANGA	11- August -2022	OCPL/SW/03/08/22
4.	Sample 04	PLANT- 1 (Near Canteen)	11- August -2022	OCPL/SW/04/08/22
5.	Sample 05	PLANT- 2 (Near Tailing Pond)	11- August -2022	OCPL/SW/05/08/22

ANALYSIS RESULT

With drinking water specifications, BIS (As per 10500- 2012 BIS)

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			JARPADA	NANDIGUTU	NAIBHANGA	PLANT- 1 (Near Canteen)	PLANT- 2 (Near Tailing Pond)		
1	Colour	Pt-Co	1.2	1.1	1.1	1.0	1.2		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	25.6	25.8	26.2	25.5	25.2		
4	pH	-	7.1	7.1	7.2	7.2	6.9	6.5- 8.5	No relaxation
5	Total Hardness (as CaCO ₃)	mg/L	50.8	51.6	56.2	61.8	42.4	300	600
6	Calcium	mg/L	12.4	17.5	16.2	16	14.8	75	200
7	Magnesium	mg/L	0.85	2.6	3.5	3.1	2.2	30	No relaxation
8	Chloride	mg/L	14.4	18	12.6	8.2	11.7	250	1000
9	Alkalinity	mg/L	21.4	26	16.8	22.5	14.6	200	600
10	Electrical Conductivity	µs/cm	68	72	59.4	62.6	74	--	--
11	Arsenic as As	µg/L	ND	ND	ND	0.01	ND	10	No relaxation
12	Lead as Pb	µg/L	ND	ND	ND	ND	0.02	10	No relaxation
13	Cadmium as Cd	µg/L	0.08	0.11	0.02	ND	0.02	3.0	No relaxation
14	Total Chromium as Cr	µg/L	ND	ND	0.02	0.04	0.04	50	No relaxation

15	Zinc as Zn	µg/L	78.5	66.8	60.4	84.2	88.4	5000	No relaxation
16	Fluoride as F	mg/L	ND	ND	ND	ND	ND	1.0	1.9
17	Iron as Fe	µg/L	22.8	18.4	14	16.6	28.4	300	1000
18	Nitrate	mg/L	0.04	0.2	0.02	0.14	0.06	45	100
19	Sodium as Na	mg/L	1.08	1.1	1.02	1.02	0.42	150	No relaxation
20	Potassium as K	mg/L	ND	ND	0.01	0.05	ND	12	No relaxation
21	Sulfate	mg/L	ND	0.02	0.08	ND	0.06	200	400
22	Total Silica as SiO ₂	mg/L	ND	0.11	0.02	0.02	0.2	--	--
23	Total suspended Solid	mg/L	0.82	0.42	1.4	0.8	0.48	--	--
24	Total dissolved Solid	mg/L	214	186	197	239	227	250	2000
25	Turbidity	NTU	0.3	0.42	0.2	0.18	0.12	5	10

Sampling By: Mr. Hrusikesh Das



**REPORT ON GROUND WATER LEVEL ANALYSIS FOR THE MONTH OF AUGUST
– 2022**

SUMMARY SHEET OF MONITORING:

SI No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
6.	Sample 01	JARPADA	12- August-2022	OCPL/GWL/01/08/22
7.	Sample 02	NANDIGUTU	12- August-2022	OCPL/GWL/02/08/22
8.	Sample 03	NAIBHANGA	12- August-2022	OCPL/GWL/03/08/22
9.	Sample 04	PLANT- 1 (Near Canteen)	12- August-2022	OCPL/GWL/04/08/22
10.	Sample 05	PLANT- 2 (Near Tailing Pond)	12- August-2022	OCPL/GWL/05/08/22

MONITORING RESULT

SI No.	Name of the location	Type of well	Dia. (m)	Depth of the well (m)	Depth of the water table BGL (M)	Remarks
1	JARPADA	Dugwell	0.8	8.2	7.24	--
2	NANDIGUTU	Dugwell	1.2	9.5	7.46	--
3	NAIBHANGA	Dugwell	1.0	8.6	8.15	--
4	PLANT- 1 (Near Canteen)	Bore-well	0.1	62	13.65	--
5	PLANT- 2 (Near Tailing Pond)	Bore-well	0.1	60	46.42	--

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

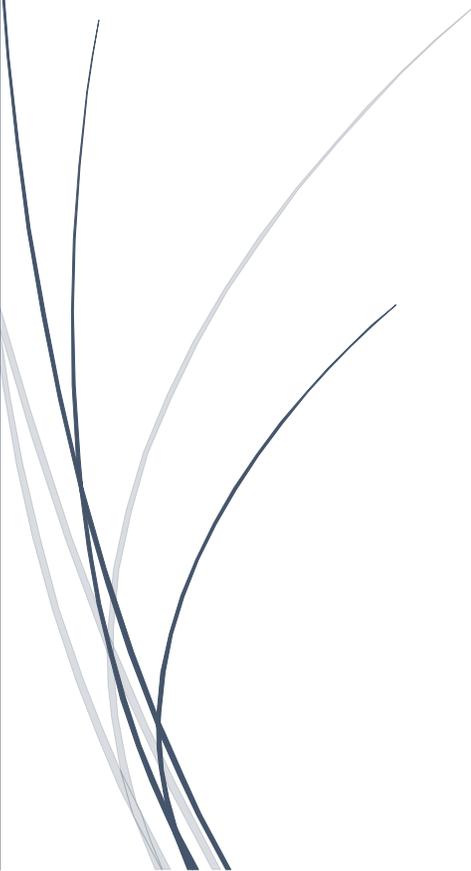


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10/10/2022

Monthly Report on Environmental Monitoring

FOR M/S ESSEL MINING & INDUSTRIES LTD

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Contents

AMBIENT AIR MONITORING DATA	3
LOCATION AND WEEKLY MONITORING SCHEDULE	3
SUMMARY SHEET OF SAMPLING	3
LOCATION: Near Filter Cake Storage Yard	5
LOCATION: Near Crushing Plant	6
LOCATION: Near Raw Material Stack Yard	7
LOCATION: Nedigutha Village	8
NOISE LEVEL MONITORING RESULT IN dBA	9
LOCATION AND WEEKLY MONITORING SCHEDULE	9
SUMMARY SHEET OF SAMPLING	9
Date of Monitoring: 03.09.2022	11
Date of Monitoring: 06.09.2022	12
Date of Monitoring: 10.09.2022	13
Date of Monitoring: 13.09.2022	14
Date of Monitoring: 17.09.2022	15
Date of Monitoring: 20.09.2022	16
Date of Monitoring: 24.09.2022	17
Date of Monitoring: 27.09.2022	18
Date of Monitoring: 31.09.2022	19
SURFACE WATER ANALYSIS FOR THE MONTH OF SEPTEMBER – 2022	20
SUMMARY SHEET OF SAMPLING (SURFACE WATER):	20
Location: JARPADA	21
Location: NANDIGUTU	23
Location: RESERVOUR POND INSIDE PLANT PREMISES	25
Location: DALKI NALA, NEAR PLANT	27
Location: NAIBHANGA	29
GROUND WATER MONITORING REPORT	31
SUMMARY SHEET OF SAMPLING (GROUND WATER):	31
ANALYSIS RESULT	31
REPORT ON GROUND WATER LEVEL ANALYSIS FOR THE MONTH OF SEPTEMBER – 2022	33
SUMMARY SHEET OF MONITORING:	33
MONITORING RESULT	33

AMBIENT AIR MONITORING DATA

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Filter Cake Storage Yard		√			√		
Near Crushing Plant		√			√		
Near Raw Material Stack Yard		√			√		
Nediguth Village			√				√

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Filter cake storage yard	01.09.2022	OCPL/ AAQ/EMIL/01/09/22
2.	Sample 02	Near Crushing Plant	01.09.2022	OCPL/ AAQ/EMIL/02/09/22
3.	Sample 03	Near Raw Material Stack Yard	01.09.2022	OCPL/ AAQ/EMIL/03/09/22
4.	Sample 04	Nedigutha Village	03.09.2022	OCPL/ AAQ/EMIL/04/09/22
5.	Sample 05	Near Filter cake storage yard	05.09.2022	OCPL/ AAQ/EMIL/05/09/22
6.	Sample 06	Near Crushing Plant	05.09.2022	OCPL/ AAQ/EMIL/06/09/22
7.	Sample 07	Near Raw Material Stack Yard	05.09.2022	OCPL/ AAQ/EMIL/07/09/22
8.	Sample 08	Nedigutha Village	06.09.2022	OCPL/ AAQ/EMIL/08/09/22
9.	Sample 09	Near Filter cake storage yard	08.09.2022	OCPL/ AAQ/EMIL/09/09/22
10.	Sample 10	Near Crushing Plant	08.09.2022	OCPL/ AAQ/EMIL/10/09/22
11.	Sample 11	Near Raw Material Stack Yard	08.09.2022	OCPL/ AAQ/EMIL/11/09/22
12.	Sample 12	Nedigutha Village	10.09.2022	OCPL/ AAQ/EMIL/12/09/22
13.	Sample 13	Near Filter cake storage yard	12.09.2022	OCPL/ AAQ/EMIL/13/09/22
14.	Sample 14	Near Crushing Plant	12.09.2022	OCPL/ AAQ/EMIL/14/09/22
15.	Sample 15	Near Raw Material Stack Yard	12.09.2022	OCPL/ AAQ/EMIL/15/09/22
16.	Sample 16	Nedigutha Village	13.09.2022	OCPL/ AAQ/EMIL/16/09/22
17.	Sample 17	Near Filter cake storage	15.09.2022	OCPL/

		yard		AAQ/EMIL/17/09/22
18.	Sample 18	Near Crushing Plant	15.09.2022	OCPL/ AAQ/EMIL/18/09/22
19.	Sample 19	Near Raw Material Stack Yard	15.09.2022	OCPL/ AAQ/EMIL/19/09/22
20.	Sample 20	Nedigutha Village	17.09.2022	OCPL/ AAQ/EMIL/20/09/22
21.	Sample 21	Near Filter cake storage yard	19.09.2022	OCPL/ AAQ/EMIL/21/09/22
22.	Sample 22	Near Crushing Plant	19.09.2022	OCPL/ AAQ/EMIL/22/09/22
23.	Sample 23	Near Raw Material Stack Yard	19.09.2022	OCPL/ AAQ/EMIL/23/09/22
24.	Sample 24	Nedigutha Village	20.09.2022	OCPL/ AAQ/EMIL/24/09/22
25.	Sample 25	Near Filter cake storage yard	22.09.2022	OCPL/ AAQ/EMIL/25/09/22
26.	Sample 26	Near Crushing Plant	22.09.2022	OCPL/ AAQ/EMIL/26/09/22
27.	Sample 27	Near Raw Material Stack Yard	22.09.2022	OCPL/ AAQ/EMIL/27/09/22
28.	Sample 28	Nedigutha Village	24.09.2022	OCPL/ AAQ/EMIL/28/09/22
29.	Sample 29	Near Filter cake storage yard	26.09.2022	OCPL/ AAQ/EMIL/29/09/22
30.	Sample 30	Near Crushing Plant	26.09.2022	OCPL/ AAQ/EMIL/30/09/22
31.	Sample 31	Near Raw Material Stack Yard	26.09.2022	OCPL/ AAQ/EMIL/31/09/22
32.	Sample 32	Nedigutha Village	27.09.2022	OCPL/ AAQ/EMIL/32/09/22
33.	Sample 33	Near Filter cake storage yard	29.09.2022	OCPL/ AAQ/EMIL/33/09/22
34.	Sample 34	Near Crushing Plant	29.09.2022	OCPL/ AAQ/EMIL/34/09/22
35.	Sample 35	Near Raw Material Stack Yard	29.09.2022	OCPL/ AAQ/EMIL/35/09/22
36.	Sample 36	Nedigutha Village	30.09.2022	OCPL/ AAQ/EMIL/36/09/22

LOCATION: Near Filter Cake Storage Yard

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	Date									Avg
		01.09.22	05.09.22	08.09.22	12.09.22	15.09.22	19.09.22	22.09.22	26.09.22	29.09.22	
PM ₁₀	100	82	84.2	86.4	82.5	88	80.2	82.6	85.7	83.8	83.93
PM _{2.5}	60	54.8	55.6	55	54.2	52	50.4	50	52.5	52	52.94
Sulphur Dioxide (SO ₂)	80	35.4	36	38.2	40.6	36.8	36.7	37.5	34.4	36	36.84
Oxide of Nitrogen (NO ₂)	80	32.2	30.6	28	32	34.5	30.8	28	26.5	25.4	29.77
Lead (Pb)	1	ND	ND								
Carbon Monoxide (CO) (8 Hrs)	2000	168	165.4	166.8	170.4	172	171.6	170.2	166.5	167	168.65
Ozone(O ₃)	180	ND	ND								
Ammonia (NH ₃)	400	28.6	30.4	30	27.8	31.5	32.2	30.5	27.4	28	29.6
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND								
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel (Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively



LOCATION: Near Crushing Plant

Parameters	Limit (µg/ M ³)	DATE									
		01.09.22	05.09.22	08.09.22	12.09.22	15.09.22	19.09.22	22.09.22	26.09.22	29.09.22	Avg
PM ₁₀	100	85.6	85	84.6	82	84.8	81.2	83.5	82	80.4	83.23
PM _{2.5}	60	52.6	52.2	51	50.4	51.8	48.6	49	50.8	48	50.48
Sulphur Dioxide (SO ₂)	80	28.5	29	29.6	26	25.4	24	24.5	25.4	22	26.04
Oxide of Nitrogen (NO ₂)	80	24	22.8	25.4	23.4	21	20.8	20	18.4	16	21.31
Lead (Pb)	1.0	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	160.8	164.2	158	165.4	161.4	167.2	155.8	159	151.6	160.37
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	30.8	30	28.4	27.5	27	26.2	24.5	25	22.6	26.88
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND								
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively



LOCATION: Near Raw Material Stack Yard

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									
		01.09.22	05.09.22	08.09.22	12.09.22	15.09.22	19.09.22	22.09.22	26.09.22	29.09.22	Avg
PM ₁₀	100	84.2	82.6	82	80.4	78.6	76	75.2	75	74.6	78.73
PM _{2.5}	60	52.6	55.2	54	55.8	57	50.4	58.8	54.8	52.4	51.22
Sulphur Dioxide (SO ₂)	80	24.2	26	25.8	21	25.7	24.8	24	20	20.4	23.54
Oxide of Nitrogen (NO ₂)	80	24	25.2	27.2	24.3	21	22.8	24	20.4	21.8	23.41
Lead (Pb)	1.0	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	162.3	160.8	158	157.5	158.6	155	154.6	152	150.8	156.6
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	28.8	28	29.6	30	27.9	26	25.4	26.8	24	27.38
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND								
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively



LOCATION: Nedigutha Village

Parameters	Limit ($\mu\text{g}/\text{M}^3$)	DATE									
		03.09.22	06.09.22	10.09.22	13.09.22	17.09.22	20.09.22	24.09.22	27.09.22	30.09.22	Avg
PM ₁₀	100	44.5	46.6	45	44.8	42	45.6	46.8	47.2	42.5	45
PM _{2.5}	60	44	46	42.8	42	45.2	44.6	45.6	44.9	40.5	43.95
Sulphur Dioxide (SO ₂)	80	18	20.5	16	17.5	16	17.8	16	18.6	15.2	17.28
Oxide of Nitrogen (NO ₂)	80	16.8	15	16.2	17	15.6	17.9	15.4	17.2	14.5	16.17
Lead (Pb)	1.0	ND	ND								
Carbon Monoxide (CO)(8 Hrs)	2000	134.6	140.6	138.8	136	137.7	138.9	139.6	140	135.2	137.93
Ozone(O ₃)	180	ND	ND								
Ammonia(NH ₃)	400	14.8	14	15.2	13.6	12	11.8	12.8	10.6	10.8	12.84
Benzene(C ₆ H ₆)	05	ND	ND								
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m ³)	01	ND	ND								
Arsenic (As) (ng/m ³)	06	ND	ND								
Nickel(Ni) (ng/m ³)	20	ND	ND								

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 &Environtech- APM -550

Measurement of PM₁₀& PM_{2.5}, SO₂, NO₂, &CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively



**NOISE LEVEL MONITORING RESULT (In DbA) FOR THE MONTH OF
SEPTEMBER**

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Beneficiation Plant Establishment Area				√		√	
First-Aid Room				√		√	
Security Office				√		√	
Administrative building				√		√	

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Beneficiation Plant Establishment Area	02.09.2022	OCPL/ NL/EMIL/01/09/22
2.	Sample 02	First-Aid Room	02.09.2022	OCPL/ NL/EMIL/02/09/22
3.	Sample 03	Security Office	02.09.2022	OCPL/ NL/EMIL/03/09/22
4.	Sample 04	Administrative building	02.09.2022	OCPL/ NL/EMIL/04/09/22
5.	Sample 05	Near Beneficiation Plant Establishment Area	07.09.2022	OCPL/ NL/EMIL/05/09/22
6.	Sample 06	First-Aid Room	07.09.2022	OCPL/ NL/EMIL/06/09/22
7.	Sample 07	Security Office	07.09.2022	OCPL/ NL/EMIL/07/09/22
8.	Sample 08	Administrative building	07.09.2022	OCPL/ NL/EMIL/08/09/22
9.	Sample 09	Near Beneficiation Plant Establishment Area	09.09.2022	OCPL/ NL/EMIL/09/09/22
10.	Sample 10	First-Aid Room	09.09.2022	OCPL/ NL/EMIL/10/09/22
11.	Sample 11	Security Office	09.09.2022	OCPL/ NL/EMIL/11/09/22
12.	Sample 12	Administrative building	09.09.2022	OCPL/ NL/EMIL/12/09/22
13.	Sample 13	Near Beneficiation Plant Establishment Area	14.09.2022	OCPL/ NL/EMIL/13/09/22
14.	Sample 14	First-Aid Room	14.09.2022	OCPL/ NL/EMIL/14/09/22
15.	Sample 15	Security Office	14.09.2022	OCPL/ NL/EMIL/15/09/22
16.	Sample 16	Administrative building	14.09.2022	OCPL/ NL/EMIL/16/09/22
17.	Sample 17	Near Beneficiation Plant Establishment Area	16.09.2022	OCPL/ NL/EMIL/17/09/22
18.	Sample 18	First-Aid Room	16.09.2022	OCPL/ NL/EMIL/18/09/22
19.	Sample 19	Security Office	16.09.2022	OCPL/ NL/EMIL/19/09/22
20.	Sample 20	Administrative building	16.09.2022	OCPL/ NL/EMIL/20/09/22
21.	Sample 21	Near Beneficiation Plant Establishment Area	21.09.2022	OCPL/ NL/EMIL/21/09/22
22.	Sample 22	First-Aid Room	21.09.2022	OCPL/ NL/EMIL/22/09/22

23.	Sample 23	Security Office	21.09.2022	OCPL/ NL/EMIL/23/09/22
24.	Sample 24	Administrative building	21.09.2022	OCPL/ NL/EMIL/24/09/22
25.	Sample 25	Near Beneficiation Plant Establishment Area	23.09.2022	OCPL/ NL/EMIL/25/09/22
26.	Sample 26	First-Aid Room	23.09.2022	OCPL/ NL/EMIL/26/09/22
27.	Sample 27	Security Office	23.09.2022	OCPL/ NL/EMIL/27/09/22
28.	Sample 28	Administrative building	23.09.2022	OCPL/ NL/EMIL/28/09/22
29.	Sample 29	Near Beneficiation Plant Establishment Area	28.09.2022	OCPL/ NL/EMIL/29/09/22
30.	Sample 30	First-Aid Room	28.09.2022	OCPL/ NL/EMIL/30/09/22
31.	Sample 31	Security Office	28.09.2022	OCPL/ NL/EMIL/31/09/22
32.	Sample 32	Administrative building	28.09.2022	OCPL/ NL/EMIL/32/09/22
33.	Sample 33	Near Beneficiation Plant Establishment Area	30.09.2022	OCPL/ NL/EMIL/33/09/22
34.	Sample 34	First-Aid Room	30.09.2022	OCPL/ NL/EMIL/34/09/22
35.	Sample 35	Security Office	30.09.2022	OCPL/ NL/EMIL/35/09/22
36.	Sample 36	Administrative building	30.09.2022	OCPL/ NL/EMIL/36/09/22

Date of Monitoring: 02.09.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00- 11.00am	Day 3.00- 4.00pm	Evening 6.00-7.00 pm	Night 10.00- 11.00 pm
1	Near Beneficiation Plant Establishment Area	55	62.8	65	56.2	36.9
2	First-Aid Room	50.6	57.9	56.3	46.8	35
3	Security Office	46.6	50	52.8	40.1	25.2
4	Administrative building	28	36.8	34	32	22
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 07.09.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00- 11.00am	Day 3.00- 4.00pm	Evening 6.00-7.00 pm	Night 10.00- 11.00 pm
1	Near Beneficiation Plant Establishment Area	56.2	65.8	62	52.6	40
2	First-Aid Room	46	64.6	55.6	46.1	32.4
3	Security Office	44	67	51.7	48	30
4	Administrative building	30	34	38	25.4	23.5
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 09.09.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	54	68.6	65.8	45.2	28
2	First-Aid Room	45.2	56.2	56	48	30.7
3	Security Office	40.5	56.9	55.1	44.8	34.6
4	Administrative building	28.4	30.3	35	27	22
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 14.09.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	55.2	68	55.4	50.6	34.6
2	First-Aid Room	48	54.6	50.9	48.7	32
3	Security Office	47.6	49.7	48.6	40	34.6
4	Administrative building	29.2	34.6	35	26.9	20.6
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 16.09.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	54.8	65.2	62	47.2	34.3
2	First-Aid Room	45	48.6	52	46.6	26
3	Security Office	40.8	42.8	48	37.9	23
4	Administrative building	25.3	31.8	35.4	29	20
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 21.09.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00- 11.00am	Day 3.00- 4.00pm	Evening 6.00-7.00 pm	Night 10.00- 11.00 pm
1	Near Beneficiation Plant Establishment Area	45.9	64	51.6	42.9	34
2	First-Aid Room	46	54.6	54	40.2	30.7
3	Security Office	47.9	45.9	50.9	38	32.4
4	Administrative building	36.2	35.9	38	32.6	25.2
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 23.09.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00- 11.00am	Day 3.00- 4.00pm	Evening 6.00-7.00 pm	Night 10.00- 11.00 pm
1	Near Beneficiation Plant Establishment Area	61.3	64.4	55	48.6	45.2
2	First-Aid Room	58	48.6	47.4	41.7	32
3	Security Office	54.6	50.9	52	44.8	26
4	Administrative building	32.7	35.8	34	30.1	22.5
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 28.09.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00- 11.00am	Day 3.00- 4.00pm	Evening 6.00-7.00 pm	Night 10.00- 11.00 pm
1	Near Beneficiation Plant Establishment Area	59.4	65.2	55.4	48	36
2	First-Aid Room	48	54	52.8	45.6	30.5
3	Security Office	49.6	38.2	56.2	42.7	31
4	Administrative building	29.8	34.2	36	28.2	26
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



Date of Monitoring: 30.09.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	50.8	62.4	53.6	48	41.5
2	First-Aid Room	54	54.2	48	42.5	30.2
3	Security Office	56	56.5	50.8	44	32
4	Administrative building	32.6	34.4	32	26	22.4
5	Ambient Noise Standard	Day Time (in dB(A)) Leq			Night Time (in dB(A)) Leq	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis



SURFACE WATER ANALYSIS FOR THE MONTH OF SEPTEMBER – 2022

SUMMARY SHEET OF SAMPLING (SURFACE WATER):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	JARPADA	04- September - 2022	OCPL/SW/01/09/22
2.	Sample 02	NANDIGUTU	04- September - 2022	OCPL/SW/02/09/22
3.	Sample 03	RESERVOUR POND INSIDE PLANT	04- September - 2022	OCPL/SW/03/09/22
4.	Sample 04	DALKI NALA NEAR PLANT	04- September - 2022	OCPL/SW/04/09/22
5.	Sample 05	NAIBHANGA	04- September - 2022	OCPL/SW/05/09/22

Location: JARPADA

Lab Sample Code: OCPL/SW/01/09/22		Report No.- OCPL/EMIL/01/09/22	
Sample description:		Test method	APHA 22 nd edition
Sample location	JARPADA	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	04- September - 2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- September - 2022
Sample type	Surface Water	Date of Analysis	06- September - 2022
Required parameters	As described in W/O	Date of Issue of report	15- September - 2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	23.6
4	pH	-	7.2
5	Total Suspended Solids	mg/L	85.8
6	Total Dissolved Solid	mg/L	917
7	Biochemical Oxygen Demand at 27°C	mg/L	7.4
8	Chemical Oxygen Demand	mg/L	1.2
9	Total Residual Chlorine	mg/L	0.68
10	Alkalinity	mg/L	92
11	Calcium	mg/L	61.5
12	Magnesium	mg/L	40.6
13	Total Hardness as CaCO ₃	mg/L	48.2
14	Electrical Conductivity	µs/cm	156.4
15	Turbidity	NTU	14.8

16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	<0.05
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	0.12
20	Zinc as Zn	µg/L	0.68
21	Fluoride as F	mg/L	<0.05
22	Iron as Fe	mg/L	16.2
23	Nitrate	mg/L	1.8
24	Sodium as Na	mg/L	4.1
25	Potassium as K	mg/L	2.8
26	Sulfate	mg/L	1.2
27	Nitrate as NO ₃	mg/L	3.7
28	Total Silica as SiO ₂	mg/L	6.2
29	Total dissolved Solid	mg/L	917

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



Location: NANDIGUTU

Lab Sample Code: OCPL/SW/02/09/22		Report No.- OCPL/EMIL/02/09/22	
Sample description:		Test method	APHA 22 nd edition
Sample location	NANDIGUTU	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	04- September - 2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- September - 2022
Sample type	Surface Water	Date of Analysis	06- September - 2022
Required parameters	As described in W/O	Date of Issue of report	15- September - 2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.8
2	Odour	-	Agreeable
3	Temperature	°C	22.9
4	pH	-	7.3
5	Total Suspended Solids	mg/L	52.6
6	Total Dissolved Solid	mg/L	839
7	Biochemical Oxygen Demand at 27°C	mg/L	4.8
8	Chemical Oxygen Demand	mg/L	2.1
9	Total Residual Chlorine	mg/L	0.82
10	Alkalinity	mg/L	42.
11	Calcium	mg/L	44.2
12	Magnesium	mg/L	53
13	Total Hardness as CaCO ₃	mg/L	49.6
14	Electrical Conductivity	µs/cm	94

15	Turbidity	NTU	36
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	<0.05
19	Total Chromium as Cr	µg/L	<0.05
20	Zinc as Zn	µg/L	1.21
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	19.4
23	Nitrate	mg/L	3.1
24	Sodium as Na	mg/L	1.86
25	Potassium as K	mg/L	0.22
26	Sulfate	mg/L	<0.01
27	Nitrate as NO ₃	mg/L	3.6
28	Total Silica as SiO ₂	mg/L	6.6
29	Total dissolved Solid	mg/L	839

Sampling By: Mr. Hrusikesh Das



Location: RESERVOUR POND INSIDE PLANT PREMISES

Lab Sample Code: OCPL/SW/03/09/22		Report No.- OCPL/EMIL/03/09/22	
Sample description:		Test method	APHA 22 nd edition
Sample location	RESERVOUR POND INSIDE PLANT PREMISES	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	04- September - 2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- September - 2022
Sample type	Surface Water	Date of Analysis	06- September - 2022
Required parameters	As described in W/O	Date of Issue of report	15- September - 2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	2.1
2	Odour	-	Agreeable
3	Temperature	°C	24.6
4	pH	-	6.7
5	Total Suspended Solids	mg/L	168
6	Total Dissolved Solid	mg/L	1142
7	Biochemical Oxygen Demand at 27°C	mg/L	9.4
8	Chemical Oxygen Demand	mg/L	4.1
9	Total Residual Chlorine	mg/L	3.8
10	Alkalinity	mg/L	88.4
11	Calcium	mg/L	44.8
12	Magnesium	mg/L	42
13	Total Hardness as CaCO ₃	mg/L	171.4

14	Electrical Conductivity	µs/cm	186.5
15	Turbidity	NTU	62.8
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	0.03
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	<0.05
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	36.6
23	Nitrate	mg/L	3.6
24	Sodium as Na	mg/L	18.2
25	Potassium as K	mg/L	3.4
26	Sulfate	mg/L	4.6
27	Nitrate as NO ₃	mg/L	4.4
28	Total Silica as SiO ₂	mg/L	22.6
29	Total dissolved Solid	mg/L	1142

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



Location: DALKI NALA, NEAR PLANT

Lab Sample Code: OCPL/SW/04/09/22		Report No.- OCPL/EMIL/04/09/22	
Sample description:		Test method	APHA 22 nd edition
Sample location	DALKI NALA, NEAR PLANT	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	04- September - 2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- September - 2022
Sample type	Surface Water	Date of Analysis	06- September - 2022
Required parameters	As described in W/O	Date of Issue of report	15- September - 2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.9
2	Odour	-	Agreeable
3	Temperature	°C	23.2
4	pH	-	7.3
5	Total Suspended Solids	mg/L	52.6
6	Total Dissolved Solid	mg/L	783
7	Biochemical Oxygen Demand at 27°C	mg/L	4.2
8	Chemical Oxygen Demand	mg/L	1.6
9	Total Residual Chlorine	mg/L	0.18
10	Alkalinity	mg/L	52
11	Calcium	mg/L	28.6
12	Magnesium	mg/L	46.5
13	Total Hardness as CaCO ₃	mg/L	40

14	Electrical Conductivity	µs/cm	106.8
15	Turbidity	NTU	24
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	<0.02
20	Zinc as Zn	µg/L	1.1
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	28.2
23	Nitrate	mg/L	21.4
24	Sodium as Na	mg/L	7.2
25	Potassium as K	mg/L	4.4
26	Sulfate	mg/L	6.2
27	Nitrate as NO ₃	mg/L	26
28	Total Silica as SiO ₂	mg/L	11
29	Total dissolved Solid	mg/L	783

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL



Location: NAIBHANGA

Lab Sample Code: OCPL/SW/05/09/22		Report No.- OCPL/EMIL/05/09/22	
Sample description:		Test method	APHA 22 nd edition
Sample location	NAIBHANGA	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	04- September - 2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- September - 2022
Sample type	Surface Water	Date of Analysis	06- September - 2022
Required parameters	As described in W/O	Date of Issue of report	15- September - 2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	TEST PARAMETER	UOM	Results
1	Colour	Pt-Co	1.88
2	Odour	-	Agreeable
3	Temperature	°C	23.1
4	pH	-	6.8
5	Total Suspended Solids	mg/L	52.4
6	Total Dissolved Solid	mg/L	961
7	Biochemical Oxygen Demand at 27°C	mg/L	4.18
8	Chemical Oxygen Demand	mg/L	1.4
9	Total Residual Chlorine	mg/L	0.6
10	Alkalinity	mg/L	28.5
11	Calcium	mg/L	40.2
12	Magnesium	mg/L	42.6
13	Total Hardness as CaCO ₃	mg/L	36
14	Electrical Conductivity	µs/cm	157.8

15	Turbidity	NTU	46.4
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	0.6
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	32.4
23	Nitrate	mg/L	2.4
24	Sodium as Na	mg/L	4.66
25	Potassium as K	mg/L	16.2
26	Sulfate	mg/L	3.1
27	Nitrate as NO ₃	mg/L	5.2
28	Total Silica as SiO ₂	mg/L	4.6
29	Total dissolved Solid	mg/L	961

Sampling By: Mr. Hrusikesh Das



GROUND WATER MONITORING REPORT

SUMMARY SHEET OF SAMPLING (GROUND WATER):

SI No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	JARPADA	08- September - 2022	OCPL/SW/01/09/22
2.	Sample 02	NANDIGUTU	08- September - 2022	OCPL/SW/02/09/22
3.	Sample 03	NAIBHANGA	08- September - 2022	OCPL/SW/03/09/22
4.	Sample 04	PLANT- 1 (Near Canteen)	08- September - 2022	OCPL/SW/04/09/22
5.	Sample 05	PLANT- 2 (Near Tailing Pond)	08- September - 2022	OCPL/SW/05/09/22

ANALYSIS RESULT

With drinking water specifications, BIS (As per 10500- 2012 BIS)

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			JARPADA	NANDIGUTU	NAIBHANGA	PLANT- 1 (Near Canteen)	PLANT- 2 (Near Tailing Pond)		
1	Colour	Pt-Co	1.1	0.8	1.1	1.0	1.2		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	24.8	25.4	24.2	25.5	25.2		
4	pH	-	7.1	7.2	7.2	7.2	6.9	6.5- 8.5	No relaxation
5	Total Hardness (as CaCO ₃)	mg/L	52	51.8	56.6	61.8	40.2	300	600
6	Calcium	mg/L	11.4	14.5	16.2	16	15.2	75	200
7	Magnesium	mg/L	0.85	1.6	3.8	3.4	2.2	30	No relaxation
8	Chloride	mg/L	8.8	14.8	12.2	8.2	14.5	250	1000
9	Alkalinity	mg/L	22.4	26.8	14	22.5	14.8	200	600
10	Electrical Conductivity	µs/cm	60.5	74	66.2	64	71	--	--
11	Arsenic as As	µg/L	ND	ND	ND	0.01	ND	10	No relaxation
12	Lead as Pb	µg/L	ND	ND	ND	ND	0.02	10	No relaxation

13	Cadmium as Cd	µg/L	0.08	0.11	0.02	ND	ND	3.0	No relaxation
14	Total Chromium as Cr	µg/L	ND	ND	0.02	0.04	0.04	50	No relaxation
15	Zinc as Zn	µg/L	76.5	58.7	55	68	75.6	5000	No relaxation
16	Fluoride as F	mg/L	ND	ND	ND	ND	ND	1.0	1.9
17	Iron as Fe	µg/L	34.2	18.4	18.4	16.6	32.4	300	1000
18	Nitrate	mg/L	0.04	0.16	0.02	0.14	0.04	45	100
19	Sodium as Na	mg/L	1.1	1.02	1.04	1.02	0.32	150	No relaxation
20	Potassium as K	mg/L	ND	ND	0.02	0.05	ND	12	No relaxation
21	Sulfate	mg/L	ND	0.02	0.04	ND	0.06	200	400
22	Total Silica as SiO ₂	mg/L	ND	0.2	0.04	0.06	0.2	--	--
23	Total suspended Solid	mg/L	0.88	0.42	1.5	0.8	0.6	--	--
24	Total dissolved Solid	mg/L	26	92	186	18	37	250	2000
25	Turbidity	NTU	0.2	0.42	0.2	0.16	0.12	5	10

Sampling By: Mr. Hrusikesh Das

Tested By: OCPD



**REPORT ON GROUND WATER LEVEL ANALYSIS FOR THE MONTH OF
SEPTEMBER – 2022**

SUMMARY SHEET OF MONITORING:

SI No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
6.	Sample 01	JARPADA	11- September-2022	OCPL/GWL/01/09/22
7.	Sample 02	NANDIGUTU	11- September-2022	OCPL/GWL/02/09/22
8.	Sample 03	NAIBHANGA	11- September-2022	OCPL/GWL/03/09/22
9.	Sample 04	PLANT- 1 (Near Canteen)	11- September-2022	OCPL/GWL/04/09/22
10.	Sample 05	PLANT- 2 (Near Tailing Pond)	11- September-2022	OCPL/GWL/05/09/22

MONITORING RESULT

SI No.	Name of the location	Type of well	Dia. (m)	Depth of the well (m)	Depth of the water table BGL (M)	Remarks
1	JARPADA	Dugwell	0.8	8.2	7.28	--
2	NANDIGUTU	Dugwell	1.2	9.5	7.51	--
3	NAIBHANGA	Dugwell	1.0	8.6	8.22	--
4	PLANT- 1 (Near Canteen)	Bore-well	0.1	62	13.69	--
5	PLANT- 2 (Near Tailing Pond)	Bore-well	0.1	60	46.5	--

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL




R. V. BRIGGS & CO. PRIVATE LTD.

ANALYTICAL CONSULTING & TECHNICAL CHEMISTS

(AN ISO 9001:2015 & ISO 45001: 2018 CERTIFIED COMPANY)

TAHER MANSION, 1ST FLOOR

9, BENTINCK STREET, KOLKATA - 700 001

Phone : (033) 4044-3380/3381/3382 / 3383, Fax : 33 2248-0447

E-mail : rvbriggs.kolkata@gmail.com, Website : www.rvbriggs.com

CIN : U51109WB1931PTC007007



TC-7815

TEST REPORT

No. AP-FG/22-23/602 Date: September 12, 2022 Page 1 of 1

Issued to : M/S. ESSEL MINING & INDUSTRIES LIMITED					
Address : Vill - Basantpur, Tehsil, Jhumpura, P.O. - Basantpur, Dist - Keonjhar, Pin - 758034, Odisha.					
Your Order No. : Email, dtd. 06.09.2022	Parameters Tested <i>Physical</i> : Temp., Velocity, Gas flow <i>Chemical</i> : SO ₂ , NO ₂ , CO, CO ₂ & PM				
Sample Description : Stack Gas					
Date & time of sampling : 09.09.2022 at 09:30 A.M. to 10:00 A.M.					
Test Completed on : 12.09.2022					
A. General information about stack :					
1. Stack connected to	: Pellet Plant Process Stack				
2. Emission due to	: Burning of Furnace Oil				
3. Material of construction of stack	: M.S.				
4. Shape of stack	: Circular				
5. Whether stack is provided with permanent platform & ladder	: Yes.				
B. Physical characteristics of stack :					
1. Height of the stack (a) from ground level : 80.0 M	(b) from roof level : ---				
2. Diameter of the stack (a) at bottom : ---	(b) at top : ---				
3. Diameter of the stack at sampling point	: 4.2 M				
4. No. of Traverse point	: 30 Nos.				
5. Height of the sampling point from GL	: 30.0 M				
C. Analysis / Characteristic of stack :					
1. Fuel used : Furnace Oil	2. Fuel consumption : 2.6 MT/hr.				
D. Results of sampling & analysis of gaseous emission : Barometric pressure : 752 mmHg					
SI No	Test Parameters	Test Method	Unit	Results	
1.	Temperature of emission	IS 11255 : Part 3 : 2008	°C	138	
2.	Velocity of gas in duct	IS 11255 : Part 3 : 2008	m/sec	10.96	
3.	Quantity of gas flow	IS 11255 : Part 3 : 2008	NM ³ /hr	377163	
E. Results of gaseous emission :					
SI No	Test Parameters	Test Method	Unit	Results	Norms as per CPCB
1.	Sulphur dioxide	IS 11255 : Part 2 : 1985	mg/Nm ³	440	Not Available
2.	Oxides of Nitrogen	IS 11255 : Part 7 : 2005	mg/Nm ³	271	Not Available
3.	Carbon monoxide	IS 13270 (By Orsat) : 1992	mg/Nm ³	<0.2	Not Available
4.	Carbon dioxide	IS 13270 (By Orsat) : 1992	% v/v	3.8	Not Available
5.	Particulate Matters	IS 11255 : Part 1 : 1985	mg/Nm ³	39	50
F. Pollution control device					
Details of pollution control devices attached with the stack : ESP					

:- END OF TEST REPORT :-

S. Mondal
Report Verified by
S. Mondal

R. Karim
(Dr. R. KARIM)
Technical Manager
Authorised Signatory
For R.V.BRIGGS & CO. (P) LTD.

88



R. V. BRIGGS & CO. PRIVATE LTD.

ANALYTICAL CONSULTING & TECHNICAL CHEMISTS

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CIN : U51109WB1931PTC007007



TC-7815

TEST REPORT

No. AP-FG/22-23/603		Date: September 12, 2022		Page 1 of 1	
Issued to		: M/S. ESSEL MINING & INDUSTRIES LIMITED			
Address		: Vill - Basantpur, Tehsil, Jhumpura, P.O. - Basantpur, Dist - Keonjhar, Pin - 758034, Odisha.			
Your Order No.		: Email, dtd. 06.09.2022		Parameters Tested	
Sample Description		: Stack Gas		Physical : Temp., Velocity, Gas flow	
Date & time of sampling		: 09.09.2022 at 11:10 A.M. to 11:50 A.M.		Chemical : CO, CO₂ & PM	
Test Completed on		: 12.09.2022			
A. General information about stack :					
1. Stack connected to		: Pellet Plant Dedusting Stack			
2. Emission due to		: Electricity			
3. Material of construction of stack		: M.S.			
4. Shape of stack		: Circular			
5. Whether stack is provided with permanent platform & ladder		: Yes.			
B. Physical characteristics of stack :					
1. Height of the stack		(a) from ground level : 60.0 M		(b) from roof level : ---	
2. Diameter of the stack		(a) at bottom : ---		(b) at top : ---	
3. Diameter of the stack at sampling point		: 1.54 M			
4. No. of Traverse point		: 20 Nos.			
5. Height of the sampling point from GL		: 25.0 M			
C. Analysis / Characteristic of stack :					
1. Fuel used : Electricity		2. Fuel consumption : ---			
D. Results of sampling & analysis of gaseous emission :					
		Barometric pressure : 752 mmHg			
SI No	Test Parameters	Test Method	Unit	Results	
1.	Temperature of emission	IS 11255 : Part 3 : 2008	°C	42	
2.	Velocity of gas in duct	IS 11255 : Part 3 : 2008	m/sec	6.14	
3.	Quantity of gas flow	IS 11255 : Part 3 : 2008	NM ³ /hr	37319	
E. Results of gaseous emission :					
SI No	Test Parameters	Test Method	Unit	Results	Norms as per CPCB
1.	Carbon monoxide	IS 13270 (By Orsat) : 1992	mg/Nm ³	<0.2	Not Available
2.	Carbon dioxide	IS 13270 (By Orsat) : 1992	% v/v	0.6	Not Available
3.	Particulate Matters	IS 11255 : Part 1 : 1985	mg/Nm ³	31	100
F. Pollution control device					
Details of pollution control devices attached with the stack : Bag filter.					

:- END OF TEST REPORT :-

S. Mondal
Report Verified by
S. Mondal

R. Karim
(Dr. R. KARIM)
Technical Manager
Authorised Signatory
For R.V.BRIGGS & CO. (P) LTD.

BB

Annexure - B

CSR EXPENSES FROM APRIL-22 TO SEPTEMBER-22			
Sl. No.	Particular	Amount	Remarks
1	Teacher for Basantpur village school	127680	06 nos teacher
2	Water Tanker for road sprinkling	900000	02 nos
3	RCC road of village panchayat road	420000	From Nedigotha to Jaiphula chowk
4	Ambulance	300000	Service for villagers
Total		1747680	



Sh. Ravindra Ku Sahu
Vice President & Plant Head