

KLCM/ENV/ **58** /2020

Date: 25.05.2020

To
The Joint Director(s)
Ministry of Environment, Forest & Climate change
Govt. of India
Eastern Regional Office
BHUBANESWAR

Sub:- Submission of Six Monthly report on the status of compliance to the conditions stipulated in the grant of Environmental Clearance Letter No.: J-11015/183/2007-IA-II(M), dtd 13.05.2009 for **Kalarangiatta Chromite Mines of M/s FACOR Ltd**

Dear Sir,

This has reference to the captioned subject, it is to inform you that we are herewith submitting six monthly compliance reports pertaining to Kalarangiatta Chromite Mines of M/s FACOR Ltd for the period from **October'2019 to March'2020** along with the Environmental Monitoring data(Ambient Air, Noise, Water & Soil) for your kind perusal. The soft copy of the same is being sent by mail to your good office.

This is for your kind information & necessary action.

Thanking You,

Yours faithfully,
for FERRO ALLOYS CORPORATION LTD



MINES MANAGER

Encl: As above

CC: The Director (IA), MoEF, 3rd Floor, Indira Paryavaran Bhawan, Jorbagh Road,
New Delhi-110032

Name of the Project : Kalarangiatta Chromite Mines, M/s. FACOR Ltd.
Project Code : Mining (Non-Coal)
Clearance Letter No.with date : J-11015/183/2007-IA-II (M) dated.13-05-2009
Period of Compliance Report : October,2019 toMarch,2020

Specific Condition

Sl. No.	Condition	Compliance Status
1.	All the conditions stipulated by the State Pollution control Board, Odisha in their consent to establish shall be effectively implemented.	All stipulated conditions are being effectively implemented.
2.	The environmental clearance is granted for opencast mining only. For the underground mining, the project proponent shall obtain separate clearance after getting the mine plan approval from the Indian Bureau of Mines.	Now opencast mining operation is going on. Before starting underground mining the project proponent will obtain separate clearance after getting mining plan approval from the Indian Bureau of Mines.
3.	The environmental clearance is subject to approval of the State Land purposes Dept. Govt. of Odisha for diversion of agricultural land for non-agricultural use.	Till date Agricultural land has not been used for non-agricultural use. Diversion of Agricultural land for non-agricultural use will be done after getting approval from the State Land use Dept., Govt. of Odisha.
4.	The Project proponent shall ensure that no natural watercourse and/or water resources are obstructed due to any mining operations. Adequate measures shall be taken for protection of Damsala Nallah and other seasonal channels, if any emanating from the mine lease, during the course of mining operation.	There is no natural water course or water resource obstructed due to the mining operation. Adequate measures have been taken before discharging the mines pumped out water to Damsala Nallah. Water is being treated in upgraded ETP with Ferrous sulfate depending upon the concentration of Cr ⁺⁶ to neutralize its effect before discharging out of the mine lease area.
5.	The top soil shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation.	All the generated top soil has been utilized for land reclamation and plantation purpose & there is no stock presently.
6.	The overburden (OB) generated during the mining operation shall be stacked at earmarked dump site (s) only and it should not be kept active for a long period of time and their phase-wise stabilization shall be carried out. There shall be one external over burden dump having maximum projected height of 30m. Proper terracing of the OB dump maintained to 27°.	The OB generated during the mining operation is being stacked at earmarked dump site. Height of the OB dump is only 19 mtr. The OB dump is not kept active for long period. Overall slope of the OB dump is being maintained below 30°. Bottom inactive slope of the dump have been vegetated with native species to prevent erosion & surface run-off. Monitoring and management of rehabilitated areas of the dump have been continuing until the vegetation becomes self-sustaining.

	<p>The OB dump shall be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six monthly basis</p>	<p>Several precautions have been taken in the dump for its slope stabilization which are given below</p> <ol style="list-style-type: none"> 1. Dumping is being carried out in peripheral dumping method by using dozers. In this method the materials are compacted by running of vehicles as well as the dozer. 2. The top surface is also maintained to avoid ponding of water which affect the stability of the dump. 3. The overburden is stacked in bench form to ensure stability. 4. The bench height is maintained at 10 – 15mtrs. 5. Various types of plants such as Acacia, Chakunda, Teak, Chhatian etc. have been planted in the inactive portions of the overburden dump. 6. The overburden dump has been stabilized by tree plantation in the dead benches after carrying out suitable terracing of size 2 M × 1 M each. 7. Grass patching has been developed on the dump slopes to ensure prevention of erosion of soil from the dump slopes due to rainwater. 8. Proper drainage system has already been maintained to prevent rain cuts on the dump. 9. Proper garland drain is being maintained all around the dump to collect the surface runoff during rain. 10. Over the bench surface of the overburden dump yard longitudinal and transverse drains have been made to enable the water to flow to the settling pit through proper drainage system. This not only prevents erosion of overburden dump material but also ensure stability of overburden dump by preventing development of hydro static pressure inside the overburden dump and proper channelization of rain water for plantation purposes. As a result the generation of rain cut is very negligible. 11. We have already planted 12593 Nos. of Saplings to stabilize this overburden dump. 12. Garland drain & retaining wall has been constructed all around the dump.
7.	<p>Catch drains and siltation ponds of appropriate size shall be constructed for the working pit, soil, OB and mineral dumps to arrest flow of silt and sediment directly into the Damsala Nallah and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc.</p>	<p>2602 metres of garland drains has been constructed around the working pit, OB & mineral dumps with siltation ponds at different intervals to arrest flow of silt & sediments.</p>

	<p>The drains should be regularly de-silted particularly after the monsoon and maintained properly. Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and overburden dump to prevent run off of water and flow of sediments directly into the Damsala Nallah and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years of data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material.</p> <p>Storm water return system should be provided. Storm water should not be allowed to go to the effluent treatment plant during high rainfall/super cyclone period. A separate storm water sump for this purpose should be created.</p>	<p>Whenever required, the silts & sediments are being cleaned. Mines pumped-out water is being used for dust suppression and plantation purposes after proper treatment.</p>
8.	<p>Dimension of retaining wall at the toe of the overburden dump and the OB benches within the mine to check run-off and siltation should be based on the rainfall data.</p>	<p>About 1713mtrs of retaining wall of width 1.5m and height 1.2m has been constructed at toe of the overburden dump to check run-off and siltation.</p>
9.	<p>Effluents containing Cr⁺⁶ shall be treated to meet the prescribed standards before reuse/discharge. Effluent treatment plant should be provided for treatment of mine water discharge and waste water generated from the workshop and mineral separation plant.</p> <p>Run off from the OB dump and other surface run off should be analyzed for Cr⁺⁶ and in case its concentration is found higher than the permissible limit the water should be treated before reuse/discharge.</p>	<p>An Effluent Treatment Plant has been in operation for treatment of mines discharge water. The concentration of Cr⁺⁶ in treated discharged water is <0.005mg/l. The analysis report of mines final discharge water after treatment in ETP for the period from October, 2019 to March, 2020 is enclosed in Annexure-1.</p> <p>Small scale mining operation is being carried out with an Excavator & 4 nos. of dumpers. Also the machineries & vehicles belong to the Contractor. The repairing of these vehicles is being done at outside workshop only. There is no workshop and mineral separation plant. Surface runoff water samples were collected in a settling pit during rainy season and then pumped to the ETP for treatment before final discharge. Mine discharge water through pumping station is pumped to Flash Mixing Tank with ferrous sulfate (FeSO₄) for reduction of Cr⁶⁺ to Cr³⁺. The effluent is then distributed to Clari-flocculators & the supernatant are passed into the Sand Filters. Now, the filtered water shall be collected in Treated Water Tank and could be disposed off meeting standards stipulated by OSPCB or reused in plantation or haul roads dust suppression.</p>

10.	Separate impervious concrete pits for disposal of sludge shall be provided for the safe disposal of sludge generated from the mining operations.	Sludge generated from mines contains Low Grade Chrome ore hence it has been stacked along with Low Grade Chrome ore for utilization.
11.	The project proponent shall ensure that the treated effluents conforming to the prescribed standards shall only be discharged.	The mines pumped out water directly collected in the intake tank of ETP through pipeline and then treated by adding FeSO ₄ & NaOH dosing. The final treated water is being discharged to outside ML area, conforming to the prescribed standards. For analysis reports refer Annexure-1 .
12.	Plantation shall be raised in an area of 12.715 ha. Including 7.5m wide green belt in the safety zone around the mining lease, overburden dump, roads etc. by planting the native species in consultation with the local DFO/Agriculture Dept. The density of the trees should be around 2500 plants per hect.	During the year 2019-20, 1674 nos. of saplings have been planted in the Safety Zone area around the Mining lease and inactive bottom slope of the dump. Native species has been planted in consultation with local Forest Dept by maintaining the density 2500plants per Ha..
13.	The void left unfilled in an area of 5.21 ha. shall be converted into the water body. The higher benches of the excavated void/mine pit shall be terraced and plantation done to stabilize the slopes. The slopes of higher benches shall be made gentler for easy accessibility by the local people to use the water body. Peripheral fencing shall be carried out all along the excavated area.	The same will be implemented at the end of mining operation.
14.	Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM & RSPM such as around crushing and screening plant, loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	All the parameters of ambient air quality are well within the prescribed limit. Although, regular water sprinkling is being carried out on haul roads, loading & unloading points to control the dust generation at source. There is no crushing and screening plant.
15.	Regular monitoring of water quality upstream and downstream of the Damsala nallah shall be carried out and record of monitored data should be maintained and submitted to the Ministry of Environment	Monitoring of water quality upstream & downstream of the Damsala nallah is being carried out and record of monitoring data are being maintained.

	& Forests, its Regional Office, Bhubaneswar, the Central Ground water Authority, the Regional Director, Central Ground water Board, the State Pollution control Board and the Central Pollution Control Board.	The test reports for the period Oct, 2019 to Mar'2020 are enclosed as AnnexureNo.-2 .
16.	The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	Garland drain water has been collected in pits and pond for recharge to ground water resources.
17.	Regular monitoring of ground water level and quality shall be carried out by establishing a network of existing wells and constructing new piezometers in and around the mining lease during the mining operation. The periodical monitoring {(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)} shall be carried out in consultation with the state ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the MoEF and its Regional Office, Bhubaneswar, the Central Ground Water Authority and the Regional Director, CGWB. If at any stage, it is observed that the ground water table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.	Monitoring of ground water level & quality is being carried out in and around the mining lease and the analysis report is enclosed as Annexure-3 & Annexure No- 4
18.	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water (surface water and ground water) for the project and effectively implement all the conditions stipulated therein.	NOC has been obtained from Central Ground Water Authority, Ministry of Water Resources, New Delhi vide letter no. 21-4/1457/OR/MIN/2017-1766 dated 12.09.2018 for ground water withdrawal. The stipulated conditions are being effectively implemented. The approved NOC is enclosed as Annexure-5 .
19.	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, CGWB	Rain water is being collected in pits and pond for suitable rain water harvesting measures. Also roof top rain water harvesting measure is implemented within the lease area.
20.	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The mineral transportation shall be carried out through the covered trucks	Vehicular emission of all machinery used in mining operations are being monitored regularly and kept under control by rigorous maintenance of all engines & changing of lubricants as per the recommendation of the manufacturer. The HEMMs, with valid PUC certificate are allowed for operation inside the mines.

	only and vehicles carrying the mineral shall not be overloaded.	Transportation of mineral has been done through covered trucks and also avoids overloading.
21.	Blasting operation shall be carried out only during the day time. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	At present, blasting operation has not been carried out. Excavation has been carried out by machines only.
22.	Drills shall either be operated with dust extractors or equipped with water injection system.	Drilling has not been done so far. In future, if drilling is required, then wet drilling practice will be adopted.
23.	Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	Water spraying arrangement is being carried out on mineral handling area, loading & unloading areas to suppress dust generation. The test report of fugitive dust emissions is enclosed as Annexure-6 .
24.	Sewage treatment plant shall be installed for the colony, ETP shall also be provided for the workshop and waste water generated during the mining operation.	As there is no colony inside lease area, so sewage treatment plant is not necessary. All the mining machineries have been engaged by contractor for mining operation and the maintenance work of their machines have been carried out at outside workshop. Therefore, question of workshop effluent does not arise. An ETP has been established for treatment of mines pumped out water and surface runoff water before discharge to outside leasehold area.
25.	Consent to operate shall be obtained from the State Pollution Control Board, Odisha before starting production from the mine.	Consent to Operate has been obtained from SPCB, Odisha before starting production from the mine. Mining operation has been going on with valid consent to operate obtained from SPCB vide their letter No. 2485/IND-I-CON-6318, Dtd.06-02-2016 for the period up to 31.03.2020.
26.	The project authorities should undertake sample survey to generate data on pre-project community health status within a radius of 1 km from proposed mine.	Sample survey for community health status within 1 Km radius from Project area has already been done.
27.	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.	Pre-placement medical examination has already been carried out of the workers engaged in the project and the records are being maintained and periodical medical examination is being carried out once in five years.
28.	Provision shall be made for the housing of construction labor 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.	Housing for construction labor is not required, since the laborers are coming from nearby villages.

	The housing may be in the form of temporary structures to be removed after the completion of the project.	
29.	The critical parameters such as SPM, RSPM, NOx, In the ambient air within the impact zone, peak particle velocity at 300 m distance or within the nearest habitation, whichever is closure shall be monitored periodically (at least once a month). Further, quality of discharged water shall also be monitored (TDS, DO, pH, suspended particulate matter and Cr ⁺⁶). The monitored data shall be uploaded on the website as well as displayed on a display board at a suitable location in public domain.	Parameters such as PM ₁₀ , PM _{2.5} , NOx & SO ₂ in the Ambient Air and Quality of discharge water are being monitored. The monitored data is being uploaded in the Company Website and display on a display board installed at the Mines main gate. Blasting operation has not been carried out. Hence peak particle velocity has not been monitored.
30.	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna namely elephant etc. spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Dept. All the safeguard measures brought out in the Wildlife Conservation Plan so prepared specific to this project site shall be effectively implemented. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. A copy of action plan shall be submitted to the MoEF and its Regional Office, Bhubaneswar.	The endangered flora and fauna are not spotted in the study area. Hence, action plan for conservation for the same is not required.
31.	A final Mine Closure Plan along with details of Corpus Fund shall be submitted to the MoEF 5 years in advance of final mine closure for approval.	The same will be submitted in due time to MOEF for approval.

GENERAL CONDITIONS

Sl. No.	Condition	Compliance Status
1	No change in mining technology and scope of working should be made without prior approval of the MoEF.	The Mining technology & scope of working will not change without approval of Ministry of Environment & Forest.
2	No change in the calendar plan including excavation, quantum of mineral chromite ore and the waste shall be made.	<p>The calendar plans including excavation, quantum of mineral chromite ore and waste overburden have not been changed.</p> <p>The calendar plan including excavation, quantum of mineral chromite ore and overburden generated during the period April, 2019 to March, 2020 is given in Annexure-7.</p>
3	At least four ambient air quality monitoring stations should be established in the core zone as well as in the buffer zone for RSPM, SPM, SO ₂ , & NO _x monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Ambient Air quality monitoring stations has already been established in consultation with SPCB.
4	Data on ambient air quality (RSPM, SPM, SO ₂ & NO _x) should be regularly submitted to the MoEF including its Regional. Office located at Bhubaneswar and the state Pollution Control Board / Central Pollution Control Board once in six months.	Data on Ambient Air Quality Monitoring with respect to PM ₁₀ , PM _{2.5} , SO ₂ & NO _x are being carried out. The monitoring reports for the period from October,2019 to March, 2020 are enclosed as Annexure-8A (Core zone) & Annexure-8B(Buffer zone)
5	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Control of fugitive dust emission is being carried out by water spraying on haul roads, loading & unloading points and ore handling yard regularly.
6	Measures should be taken for control of noise levels below 85 dB (A) in the work environment. Workers engaged in operations of HEMM etc. should be provided with ear plugs/muffs.	Control measures such as maintenance of all machines including checking of silencers regularly, and changing of engine oil as per recommendation of the manufacturer has been carried out regularly. The workers engaged at noise generating areas are provided with earplugs/muffs. The present noise level at work environment is below 85 dB (A). Sound pressure level at work environment is enclosed as Annexure-9 .

7	<p>Industrial waste water (Workshop & Waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422(E) Dtd. 19thMay, 1993 and 31stDecember, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.</p>	<p>The Mines waste water is being collected directly in intake tank of the ETP for treatment of Cr⁺⁶ and finally discharged to outside ML area. The analysis of this water shows that all parameters are well within the prescribed limit. The analysis report of mines final discharge water after treatment in ETP is given in Annexure -1. Almost all mining machineries and transporting vehicles are being engaged on contract basis for transportation of OB and chrome ore. The repairing of these vehicles is being done at outside workshop by the contractor. Therefore, question of workshop effluent does not arise.</p>
8	<p>Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.</p>	<p>In addition to water spraying for dust suppression, workers engaged in dusty areas such as dumper drivers, HEMM Operators, are being provided with nose masks as precautionary measure. Training & information on safety, health hazards are being given to all categories of deserved workers. Occupational health surveillance programme of all categories of workers and employees have been conducted periodically.</p>
9	<p>A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.</p>	<p>A separate Environment Management Cell with qualified personnel and well equipped Environment Engineering Laboratory are functioning under the control of Senior Executive. Besides we are carrying out all Environmental monitoring & analysis through a MoEF & NABL accredited laboratory M/S Environmental Research and Services (India) Pvt. Ltd., Bhubaneswar & the monitoring reports are enclosed in Annexures.</p>
10	<p>The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the MoEF and its Regional Office located at Bhubaneswar.</p>	<p>Separate funds provision is made to carryout environmental protection measures. Details of expenses for Environmental protection measures during the year 2019-20 and proposed budgeted amount for the year 2020-21 are given in Annexure-10.</p>
11	<p>The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.</p>	<p>The date of final approval of the Project is 04.10.2010 by DMS and 23-01-2012 by SPCB.</p>

12	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the Officer (s) of the Regional Office by furnishing the requisite data/information/ monitoring reports.	The project authorities will extend full co-operation to the officers of the Regional office by furnishing the requisite data/ information/ monitoring reports.
13	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the MoEF, its Regional Office, Bhubaneswar, CPCB, and SPCB, The project proponent shall upload the status of compliance of the environment clearance conditions on their website and update the same periodically and simultaneously send the same by e-mail to the Regional Office, MoEF, Bhubaneswar.	Implementing the conditions stipulated in the Environmental Clearance letter. The Six monthly report on Status of compliance of the Environmental Clearance conditions have been submitted to the concerned authorities and the same is being uploaded in our website.



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2005 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC74401000000352F

Test Report Format No.: ERSIPL/FM/40

ANALYSIS REPORT OF EFFLUENT WATER SAMPLE (For Nov-2019)

Page 1 of 2

Date: 11 Dec 2019
Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD
Date of Sampling : 30.11.2019
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of the client
Sample Received on : 02.12.2019
Analysis Started on : 03.12.2019
Analysis Completed on : 07.12.2019
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014
Quantity of Sample : 2ltrs
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature
Sampling Location Specification :
ERSIPL/WA/1597 **EWQ1- Mines Final Discharge Water after Treatment in ETP**

Sl.	Parameters Analysed	Test Method	Unit	Permissible Limit	Result
				As per G.S.R. 422(E) dated 19.05.1993	ERSIPL/ WA/1597
01	Suspended Solids	IS 3025:Part 17: 1984 Reaffirmed-2017	mg/L	100.0	<10.0
02	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	No.	5.5 – 9.0	7.72
03	Oil & Grease	IS 3025:Part 39: 1991 Reaffirmed-2014	mg/L	10.0	<10.0
04	BOD @ 27 ⁰ C 3Days	IS:3025:Part 44:1993 Reaffirmed 2014, 27 ⁰ C 3 days	mg/L	30.0	3.9
05	COD	IS 3025:Part 58:2006 Reaffirmed-2017	mg/L	250.0	16.0
06	Hexavalent Chromium CRVI	IS 3025: Part 52:2003, Reaffirmed 2014	mg/L	0.1	<0.05
07	Fluoride (as F)	IS 3025:Part 60: 2008 Reaffirmed-2013	mg/L	2.0	<0.1
08	Dissolved Phosphates (as P)	IS 3025:Part 31: 1988 Reaffirmed-2014	mg/L	5.0	0.10
09	Iron (as Fe)	IS 3025:Part 53: 2003 Reaffirmed-2014	mg/L	3.0	<0.07
10	Dissolved Oxygen	IS 3025: Part 38:1991, Reaffirmed 2014	mg/L	--	7.5


(Authorized Signatory)

S.P. Pattanayak
Tech. Manager

.....END OF TEST REPORT.....

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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/40

ANALYSIS REPORT OF EFFLUENT WATER SAMPLE (For Nov-2019)

Page 1 of 2

Date: 11 Dec 2019
Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD
Date of Sampling : 30.11.2019
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of the client
Sample Received on : 02.12.2019
Analysis Started on : 03.12.2019
Analysis Completed on : 07.12.2019
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014
Quantity of Sample : 2ltrs
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature
Sampling Location Specification :
ERSIPL/WA/1597 **EWQ1- Mines Final Discharge Water after Treatment in ETP**

Sl.	Parameters Analysed	Test Method	Unit	Permissible Limit As per G.S.R. 422(E) dated 19.05.1993	Result
					ERSIPL/ WA/1597
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A
03	Temperature	IS 3025: Part 9:1984, Reaffirmed 2017	°C	Shall not exceed 5 ⁰ C above the receiving	NOT APPLICABLE
04	Total Residual Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2014	mg/L	1.0	Nil
05	Ammonical Nitrogen (as N)	IS 3025:Part 34: 1988 Reaffirmed-2014	mg/L	50.0	1.6
06	Total Kjeldahl Nitrogen (as NH ₃)	IS 3025:Part 34: 1988 Reaffirmed-2014	mg/L	100.0	1.8
07	Free Ammonia (as NH ₃)	IS 3025:Part 34: 1988 Reaffirmed-2014	mg/L	5.0	0.1
08	Arsenic (as As)	IS 3025: Part 37:1988, Reaffirmed 2014	mg/L	0.2	ND

Environmental Research and Services (India) Pvt. Ltd.

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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

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09	Mercury (as Hg)	IS 3025:Part 48: 1994 Reaffirmed-2014	mg/L	0.01	ND
10	Lead (as Pb)	IS 3025:Part 47: 1994 Reaffirmed-2014	mg/L	0.1	ND
11	Cadmium (as Cd)	IS 3025:Part 41: 1992 Reaffirmed-2014	mg/L	2.0	ND
12	Total Chromium (as Cr)	IS 3025:Part 52: 2003 Reaffirmed-2014	mg/L	2.0	0.12
13	Copper (as Cu)	IS 3025:Part 42: 1992 Reaffirmed-2014	mg/L	3.0	ND
14	Zinc (as Zn)	IS 3025:Part 49: 1994 Reaffirmed-2014	mg/L	5.0	ND
15	Selenium (as Se)	IS 3025:Part 56: 2003 Reaffirmed-2014	mg/L	0.05	ND
16	Nickel (as Ni)	IS 3025:Part 54: 2003 Reaffirmed-2014	mg/L	3.0	ND
17	Cyanide (as CN)	IS 3025:Part 27: 1986 Reaffirmed-2014	mg/L	0.2	ND
18	Sulphide (as S)	IS 3025:Part 29: 1986 Reaffirmed-2014	mg/L	2.0	<0.1
19	Phenolic Compounds(as C ₆ H ₅ OH)	IS 3025:Part 43: 1992 Reaffirmed-2014	mg/L	1.0	ND
20	Manganese (as Mn)	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	2.0	ND
21	Vanadium (as V)	APHA 22nd Edition, 3500-V D. (Gallic Acid Method)	mg/L	0.2	ND
22	Nitrate Nitrogen	IS 3025:Part 34: 1983 Reaffirmed-2014	mg/L	10.0	<5.0
23	Particle Size of Suspended Solids	XX	--	shall pass 850 micron IS Sieve.	NA
24	Bio-assay Test	XX	--	90% survival of fish after 96 hrs in 100% effluent	96% Survival of fish after 96 hrs in 100% effluent
25	Total Coliform	IS 1622:1981, Reaffirmed 2014	MPN/100 ml	--	8.0

ND - Not Detected

.....END OF TEST REPORT.....


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

ULR-TC74402000000119F

Test Report Format No.: ERSIPL/FM/40

ANALYSIS REPORT OF EFFLUENT WATER SAMPLE (For Feb-2020)

Page 1 of 2

Date: 11 Mar 2020	Test Report No: ERSIPL/TR/WA/054
Name and Address of the Customer	: Kalarangiatta Chromite Mines of M/S FACOR LTD
Date of Sampling	: 28.02.2020
Sample Collected by	: Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	: Representative of the client
Sample Received on	: 02.03.2020
Analysis Started on	: 03.03.2020
Analysis Completed on	: 07.03.2020
Method of Sampling	: IS 3025: Part 1: 1987, Reaffirmed 2014
Quantity of Sample	: 2ltrs
Type of Container	: Glass Bottle & HDPE Bottle
Environment Condition	: All Tests carried out in Room Temperature
Sampling Location Specification	:
ERSIPL/WA/1771	EWQ1- Mines Final Discharge Water after Treatment in ETP

Sl.	Parameters Analysed	Test Method	Unit	Permissible Limit As per G.S.R. 422(E) dated 19.05.1993	Result
					ERSIPL/ WA/1771
01	Suspended Solids	IS 3025:Part 17: 1984 Reaffirmed-2017	mg/L	100.0	<10.0
02	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	No.	5.5 – 9.0	7.59
03	Oil & Grease	IS 3025:Part 39: 1991 Reaffirmed-2014	mg/L	10.0	<10.0
04	BOD @ 27 ⁰ C 3Days	IS:3025:Part 44:1993 Reaffirmed 2014, 27 ⁰ C 3 days	mg/L	30.0	3.0
05	COD	IS 3025:Part 58:2006 Reaffirmed-2017	mg/L	250.0	12.0
06	Hexavalent Chromium CRVI	IS 3025: Part 52:2003, Reaffirmed 2014	mg/L	0.1	<0.05
07	Fluoride (as F)	IS 3025:Part 60: 2008 Reaffirmed-2013	mg/L	2.0	<0.1
08	Dissolved Phosphates (as P)	IS 3025:Part 31: 1988 Reaffirmed-2014	mg/L	5.0	0.12
09	Iron (as Fe)	IS 3025:Part 53: 2003 Reaffirmed-2014	mg/L	3.0	<0.07
10	Dissolved Oxygen	IS 3025: Part 38:1991, Reaffirmed 2014	mg/L	--	9.8


 (Authorized Signatory)
S.P Pattanayak



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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/40

ANALYSIS REPORT OF EFFLUENT WATER SAMPLE (For Feb-2020)

Page 1 of 2

Date: 11 Mar 2020 **Test Report No: ERSIPL/TR/WA/54T**

Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD

Date of Sampling : 28.02.2020

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of the client

Sample Received on : 02.03.2020

Analysis Started on : 03.03.2020

Analysis Completed on : 07.03.2020

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sampling Location Specification :
ERSIPL/WA/1771 **EWQ1- Mines Final Discharge Water after Treatment in ETP**

Sl.	Parameters Analysed	Test Method	Unit	Permissible Limit As per G.S.R. 422(E) dated 19.05.1993	Result
					ERSIPL/ WA/1771
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A
03	Temperature	IS 3025: Part 9:1984, Reaffirmed 2017	°C	Shall not exceed 5 ⁰ C above the receiving	NOT APPLICABLE
04	Total Residual Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2014	mg/L	1.0	Nil
05	Ammonical Nitrogen (as N)	IS 3025:Part 34: 1988 Reaffirmed-2014	mg/L	50.0	2.5
06	Total Kjeldahl Nitrogen (as NH ₃)	IS 3025:Part 34: 1988 Reaffirmed-2014	mg/L	100.0	2.0
07	Free Ammonia (as NH ₃)	IS 3025:Part 34: 1988 Reaffirmed-2014	mg/L	5.0	0.18
08	Arsenic (as As)	IS 3025: Part 37:1988, Reaffirmed 2014	mg/L	0.2	ND



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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Page 2 of 2

09	Mercury (as Hg)	IS 3025:Part 48: 1994 Reaffirmed-2014	mg/L	0.01	ND
10	Lead (as Pb)	IS 3025:Part 47: 1994 Reaffirmed-2014	mg/L	0.1	ND
11	Cadmium (as Cd)	IS 3025:Part 41: 1992 Reaffirmed-2014	mg/L	2.0	ND
12	Total Chromium (as Cr)	IS 3025:Part 52: 2003 Reaffirmed-2014	mg/L	2.0	0.14
13	Copper (as Cu)	IS 3025:Part 42: 1992 Reaffirmed-2014	mg/L	3.0	ND
14	Zinc (as Zn)	IS 3025:Part 49: 1994 Reaffirmed-2014	mg/L	5.0	ND
15	Selenium (as Se)	IS 3025:Part 56: 2003 Reaffirmed-2014	mg/L	0.05	ND
16	Nickel (as Ni)	IS 3025:Part 54: 2003 Reaffirmed-2014	mg/L	3.0	ND
17	Cyanide (as CN)	IS 3025:Part 27: 1986 Reaffirmed-2014	mg/L	0.2	ND
18	Sulphide (as S)	IS 3025:Part 29: 1986 Reaffirmed-2014	mg/L	2.0	<0.1
19	Phenolic Compounds(as C ₆ H ₅ OH)	IS 3025:Part 43: 1992 Reaffirmed-2014	mg/L	1.0	ND
20	Manganese (as Mn)	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	2.0	ND
21	Vanadium (as V)	APHA 22nd Edition, 3500-V D. (Gallic Acid Method)	mg/L	0.2	ND
22	Nitrate Nitrogen	IS 3025:Part 34: 1983 Reaffirmed-2014	mg/L	10.0	<5.0
23	Particle Size of Suspended Solids	XX	--	shall pass 850 micron IS Sieve	NA
24	Bio-assay Test	XX	--	90% survival of fish after 96 hrs in 100% effluent	92% Survival of fish after 96 hrs in 100% effluent
25	Total Coliform	IS 1622:1981, Reaffirmed 2014	MPN/100 ml	--	18.0

ND - Not Detected

.....END OF TEST REPORT.....


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC74401000000353F

Test Report Format No.: ERSIPL/FM/40

ANALYSIS REPORT OF SURFACE WATER SAMPLE (For Nov-2019)

Page 1 of 1

Date: 11 Dec 2019

Test Report No: ERSIPL/TR/WA/433

Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD
Date of Sampling : 30.11.2019
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of the client
Sample Received on : 02.12.2019
Analysis Started on : 03.12.2019
Analysis Completed on : 07.12.2019
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014
Quantity of Sample : 2ltrs
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature

Sampling Location Specification :

ERSIPL/WA/1598

SWQ1- Damsala nallah up-stream water (100 mtr up)

ERSIPL/WA/1599

SWQ2- Damsala nallah down-stream water (100 mtr down)
(with impact of other mines discharge)

Sl.	Parameters Analysed	Test Method	Unit	Permissible Limit As per IS-2296 class "C"	Result	
					ERSIPL/ WA/1598	ERSIPL/ WA/1599
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	No.	6.5 – 8.5	6.25	6.22
02	Dissolved Oxygen	IS 3025: Part 38:1991, Reaffirmed 2014	mg/L	4.0 (min)	7.9	6.8
03	BOD @ 27°C 3Days	IS:3025:Part 44:1993 Reaffirmed 2014	mg/L	3.0	3.7	3.4
04	Fluoride (as F)	IS 3025:Part 60: 2008 Reaffirmed-2013	mg/L	1.5	<0.1	<0.1
05	Chlorides (as Cl)	IS 3025:Part 32: 1988 Reaffirmed-2014	mg/L	600.0	16.63	15.65
06	Hexavalent Chromium (as Cr ⁶⁺)	IS 3025: Part 52:2003, Reaffirmed 2014	mg/L	0.05	<0.03	<0.03
07	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2014	mg/L	1500.0	43.0	43.3
08	Sulphates (as SO ₄)	IS 3025:Part 24: 1986 Reaffirmed-2014	mg/L	400.0	3.0	2.75
09	Iron (as Fe)	IS 3025:Part 53: 2003 Reaffirmed-2014	mg/L	50.0	<0.07	<0.07
10	Oil & Grease	IS 3025:Part 39: 1991 Reaffirmed-2014	mg/L	0.1	0.08	0.06

(Authorized Signatory)

S.P.Pattanayak
Tech. Manager

.....END OF TEST REPORT.....

Environmental Research and Services (India) Pvt. Ltd.

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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329 , E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/40

ANALYSIS REPORT OF SURFACE WATER SAMPLE (For Nov-2019)

Page 1 of 2

Date: 11 Dec 2019
Test Report No: ERSIPL/TR/WA/433T
Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD
Date of Sampling : 30.11.2019
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of the client
Sample Received on : 02.12.2019
Analysis Started on : 03.12.2019
Analysis Completed on : 07.12.2019
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014
Quantity of Sample : 2ltrs
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature

Sampling Location Specification :
ERSIPL/WA/1598 : SWQ1- Damsala nallah up-stream water (100 mtr up)
ERSIPL/WA/1599 : SWQ2- Damsala nallah down-stream water (100 mtr down)
(with impact of other mines discharge)

Sl.	Parameters Analysed	Test Method	Unit	Permissible Limit As per IS-2296 class "C"	Result	
					ERSIPL/ WA/1598	ERSIPL/ WA/1599
01	Total Coliform	IS 1622:1981, Reaffirmed 2014	MPN/ 100 ml	5000.0	320.0	380.0
02	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	300.0	10-15	10-15
03	Cadmium (as Cd)	IS 3025:Part 41: 1992 Reaffirmed-2014	mg/L	0.01	ND	ND
04	Cyanide (as CN)	IS 3025:Part 27: 1986 Reaffirmed-2014	mg/L	0.05	ND	ND
05	Selenium (as Se)	IS 3025:Part 56: 2003 Reaffirmed-2014	mg/L	0.05	ND	ND
06	Lead (as Pb)	IS 3025:Part 47: 1994 Reaffirmed-2014	mg/L	0.1	ND	ND
07	Copper (as Cu)	IS 3025:Part 42: 1992 Reaffirmed-2014	mg/L	1.5	ND	ND
08	Arsenic (as As)	IS 3025: Part 37:1988, Reaffirmed 2014	mg/L	0.2	ND	ND



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Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Page 2 of 2

09	Phenolic Compounds	IS 3025:Part 43: 1992 Reaffirmed-2014	mg/L	0.005	ND	ND
10	Zinc (as Zn)	IS 3025:Part 49: 1994 Reaffirmed-2014	mg/L	15.0	ND	ND
11	Insecticides	IS 15670:2006, Reaffirmed 2012	mg/L	Absent	Absent	Absent
12	Anionic detergents	IS 13428 :2005 Reaffirmed-2014	mg/L	1.0	ND	ND
13	Nitrate (as NO ₃)	IS 3025:Part 34: 1983 Reaffirmed-2014	mg/L	50	<5.0	<5.0

ND - Not Detected

.....END OF TEST REPORT.....


(Authorized Signatory)

S.P.Pattanaya
Tech.Manager

ULR-TC744020000000120F

Test Report Format No.: ERSIPL/FM/40

ANALYSIS REPORT OF SURFACE WATER SAMPLE (For Feb-2020)

Page 1 of 1

Date: 11 Mar 2020	Test Report No: ERSIPL/TR/WA/055
Name and Address of the Customer :	Kalarangiatta Chromite Mines of M/S FACOR LTD
Date of Sampling :	28.02.2020
Sample Collected by :	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of :	Representative of the client
Sample Received on :	02.03.2020
Analysis Started on :	03.03.2020
Analysis Completed on :	07.03.2020
Method of Sampling :	IS 3025: Part 1: 1987, Reaffirmed 2014
Quantity of Sample :	2ltrs
Type of Container :	Glass Bottle & HDPE Bottle
Environment Condition :	All Tests carried out in Room Temperature

Sampling Location Specification :

ERSIPL/WA/1772

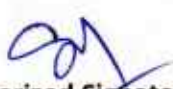
SWQ1- Damsala nallah up-stream water (100 mtr up)

ERSIPL/WA/1773

SWQ2- Damsala nallah down-stream water (100 mtr down)
(with impact of other mines discharge)

Sl.	Parameters Analysed	Test Method	Unit	Permissible Limit As per IS-2296 class "C"	Result	
					ERSIPL/ WA/1772	ERSIPL/ WA/1773
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	No.	6.5 – 8.5	7.03	7.06
02	Dissolved Oxygen	IS 3025: Part 38:1991, Reaffirmed 2014	mg/L	4.0 (min)	9.4	9.3
03	BOD @ 27°C 3Days	IS:3025:Part 44:1993 Reaffirmed 2014	mg/L	3.0	4.1	3.5
04	Fluoride (as F)	IS 3025:Part 60: 2008 Reaffirmed-2013	mg/L	1.5	<0.1	<0.1
05	Chlorides (as Cl)	IS 3025:Part 32: 1988 Reaffirmed-2014	mg/L	600.0	18.59	15.65
06	Hexavalent Chromium (as Cr ⁺⁶)	IS 3025: Part 52:2003, Reaffirmed 2014	mg/L	0.05	0.06	0.07
07	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2014	mg/L	1500.0	99.8	101.9
08	Sulphates (as SO ₄)	IS 3025:Part 24: 1986 Reaffirmed-2014	mg/L	400.0	7.75	6.62
09	Iron (as Fe)	IS 3025:Part 53: 2003 Reaffirmed-2014	mg/L	50.0	<0.07	<0.07
10	Oil & Grease	IS 3025:Part 39: 1991 Reaffirmed-2014	mg/L	0.1	0.18	0.15

.....END OF TEST REPORT.....


 (Authorized Signatory)
S.P. Pattanayak
 Tech. Manager



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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/40

ANALYSIS REPORT OF SURFACE WATER SAMPLE (For Feb-2020)

Page 1 of 2

Date: 11 Mar 2020 Test Report No: ERSIPL/TR/WA/55T

Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD

Date of Sampling : 28.02.2020

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of the client

Sample Received on : 02.03.2020

Analysis Started on : 03.03.2020

Analysis Completed on : 07.03.2020

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sampling Location Specification :

ERSIPL/WA/1772

ERSIPL/WA/1773

SWQ1- Damsala nallah up-stream water (100 mtr up)

SWQ2- Damsala nallah down-stream water (100 mtr down)
(with impact of other mines discharge)

Sl.	Parameters Analysed	Test Method	Unit	Permissible Limit As per IS-2296 class "C"	Result	
					ERSIPL/ WA/1772	ERSIPL/ WA/1773
01	Total Coliform	IS 1622:1981, Reaffirmed 2014	MPN/ 100 ml	5000.0	452.0	480.0
02	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	300.0	10-15	10-15
03	Cadmium (as Cd)	IS 3025:Part 41: 1992 Reaffirmed-2014	mg/L	0.01	ND	ND
04	Cyanide (as CN)	IS 3025:Part 27: 1986 Reaffirmed-2014	mg/L	0.05	ND	ND
05	Selenium (as Se)	IS 3025:Part 56: 2003 Reaffirmed-2014	mg/L	0.05	ND	ND
06	Lead (as Pb)	IS 3025:Part 47: 1994 Reaffirmed-2014	mg/L	0.1	ND	ND
07	Copper (as Cu)	IS 3025:Part 42: 1992 Reaffirmed-2014	mg/L	1.5	ND	ND
08	Arsenic (as As)	IS 3025: Part 37:1988, Reaffirmed 2014	mg/L	0.2	ND	ND



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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Page 2 of 2

09	Phenolic Compounds	IS 3025:Part 43: 1992 Reaffirmed-2014	mg/L	0.005	ND	ND
10	Zinc (as Zn)	IS 3025:Part 49: 1994 Reaffirmed-2014	mg/L	15.0	ND	ND
11	Insecticides	IS 15670:2006, Reaffirmed 2012	mg/L	Absent	Absent	Absent
12	Anionic detergents	IS 13428 :2005 Reaffirmed-2014	mg/L	1.0	ND	ND
13	Nitrate (as NO ₃)	IS 3025:Part 34: 1983 Reaffirmed-2014	mg/L	50	<5.0	<5.0

ND - Not Detected

.....END OF TEST REPORT.....

(Authorized Signatory)

S.P.Pattanayak
Tech.Manager

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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

GROUND WATER LEVEL, DEPTH FROM SURFACE

(For Nov-2019)

Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD
Date of Monitoring : 29-30.11.2019
Monitoring carried by : ERSIPL's representative
Monitoring carried in presence of : Client's representative

Sl. No.	Location	Depth (bgl in meter)
01	Tube well water near TISCO main gate	7.98
02	Tube well inside the lease hold area	4.06
03	Open well water of Ransol	1.91
04	Tube well water of Kalarangiatta	9.75
05	Tube well water of Bhimtangar	11.81
06	Open well village Goramian	3.84
07	Tube well near OMC labour colony	11.28
08	Open well village Chingudipal	5.89
09	Open well village Kusumundia	4.01

.....END OF TEST REPORT.....

(Authorized Signatory)

S.P.Pattanayak
Tech.Manager



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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

GROUND WATER LEVEL, DEPTH FROM SURFACE

(For Feb-2020)

Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD
Date of Monitoring : 27-28.02.2020
Monitoring carried by : ERSIPL's representative
Monitoring carried in presence of : Client's representative

Sl. No.	Location	Depth (bgL in meter)
01	Tube well water near TISCO main gate	8.33
02	Tube well inside the lease hold area	4.93
03	Open well water of Ransol	2.68
04	Tube well water of Kalarangiatta	10.36
05	Tube well water of Bhimtangar	12.07
06	Open well village Goramian	4.47
07	Tube well near OMC labour colony	11.99
08	Open well village Chingudipal	6.78
09	Open well village Kusumundia	5.00

.....END OF TEST REPORT.....

(Authorized Signatory)

S.P.Pattanayak
Tech.Manager



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2005 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibsr@gmail.com

ULR-TC744019000000351F

Test Report Format No.: ERSIPL/FM/40

ANALYSIS REPORT OF GROUND WATER SAMPLE (For Nov-2019)

Page 1 of 1

Date: 11 Dec 2019

Test Report No: ERSIPL/TR/WA/431

Name and Address of the Customer	:	Kalarangiatta Chromite Mines of M/S FACOR LTD
Date of Sampling	:	29-30.11.2019
Sample Collected by	:	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	:	Representative of the client
Sample Received on	:	02.12.2019
Analysis Started on	:	03.12.2019
Analysis Completed on	:	07.12.2019
Method of Sampling	:	IS 3025: Part 1: 1987, Reaffirmed 2014
Quantity of Sample	:	2ltrs
Type of Container	:	Glass Bottle & HDPE Bottle
Environment Condition	:	All Tests carried out in Room Temperature

Sampling Location Specification

ERSIPL/WA/1592	:	GWQ1- Tube well water near TISCO main gate
ERSIPL/WA/1593	:	GWQ2- Tube well inside the lease hold area
ERSIPL/WA/1594	:	GWQ3- Open well water of Ransol
ERSIPL/WA/1595	:	GWQ4- Tube well water of Kalarangiatta
ERSIPL/WA/1596	:	GWQ5- Tube well water of Bhimtangar

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result				
					ERSIPL/WA/1592	ERSIPL/WA/1593	ERSIPL/WA/1594	ERSIPL/WA/1595	ERSIPL/WA/1596
01	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.2	0.4	0.5	0.7	0.3
02	pH	IS 3025:Part 11: 1983 Reaffirmed-2017	No	6.5 to 8.5	7.33	7.50	7.10	6.54	7.32
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2014	mg/L	200.0	170.52	186.20	94.08	190.12	176.4
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2014	mg/L	0.3	<0.07	<0.07	<0.07	<0.07	<0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2014	mg/L	250.0	22.50	20.54	16.63	22.50	20.54
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2014	mg/L	500.0	216.0	282.0	107.5	229.0	204.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2014	mg/L	75.0	26.70	36.13	11.78	21.99	20.42
08	Magnesium as Mg	IS 3025 (Part 46):1994, Reaffirmed -2014	mg/L	30.0	25.29	23.38	15.75	32.93	30.54
09	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2014	mg/L	200.0	3.37	2.62	3.62	1.87	4.25
10	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2013	mg/L	1.0	<0.1	<0.1	0.13	<0.1	0.15
11	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2014	mg/L	200.0	132.0	200.0	52.0	124.0	120.0

(Authorized Signatory)

S.P.Pattanayak
Tech. Manager

..... END OF TEST REPORT
Page 1 of 6



Environmental Research and Services (India) Pvt. Ltd.

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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
 Tel: +91-9437143248, +91-9937690329 , E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/40

ANALYSIS REPORT OF GROUND WATER SAMPLE (For Nov-2019)

Page 1of 2

Date: 11 Dec 2019

Test Report No: ERSIPL/TR/WA/431T

Name and Address of the Customer	:	Kalarangiatta Chromite Mines of M/S FACOR LTD
Date of Sampling	:	29-30.11.2019
Sample Collected by	:	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	:	Representative of the client
Sample Received on	:	02.12.2019
Analysis Started on	:	03.12.2019
Analysis Completed on	:	07.12.2019
Method of Sampling	:	IS 3025: Part 1: 1987, Reaffirmed 2014
Quantity of Sample	:	2ltrs
Type of Container	:	Glass Bottle & HDPE Bottle
Environment Condition	:	All Tests carried out in Room Temperature

Sampling Location Specification

ERSIPL/WA/1592	:	GWQ1- Tube well water near TISCO main gate
ERSIPL/WA/1593	:	GWQ2- Tube well inside the lease hold area
ERSIPL/WA/1594	:	GWQ3- Open well water of Ransol
ERSIPL/WA/1595	:	GWQ4- Tube well water of Kalarangiatta
ERSIPL/WA/1596	:	GWQ5- Tube well water of Bhimtangar

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result				
					ERSIPL/WA/1592	ERSIPL/WA/1593	ERSIPL/WA/1594	ERSIPL/WA/1595	ERSIPL/WA/1596
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A	A
04	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2014	mg/L	0.2 (min)	Nil	Nil	Nil	Nil	Nil
05	Copper	IS 3025:Part 42: 1992 Reaffirmed-2014	mg/L	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
06	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
07	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2014	mg/L	45.0	<5.0	<5.0	<5.0	<5.0	<5.0
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2014	mg/L	0.001	ND	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2014	mg/L	0.001	ND	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2014	mg/L	0.003	ND	ND	ND	ND	ND
11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND	ND

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Page 2 of 2

12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2014	mg/L	0.05	ND	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2014	mg/L	5.0	<0.1	<0.1	<0.1	<0.1	<0.1
16	Anionicdetergents	IS 13428 :2005 Reaffirmed-2014	mg/L	0.2	ND	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2014	mg/L	0.05	0.14	0.04	0.12	0.11	0.16
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2014	mg/L	0.5	ND	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2014	mg/L	0.03	ND	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2014	mg/L	0.02	ND	ND	ND	ND	ND

ND - Not Detected

.....END OF TEST REPORT.....

(Authorized Signatory)

S.P.Pattanayak
Tech.Manager



Environmental Research and Services (India) Pvt. Ltd.

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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC744020000000117F

Test Report Format No.: ERSIPL/FM/40

ANALYSIS REPORT OF GROUND WATER SAMPLE (For Feb-2020)

Page 1 of 1

Date: 11 Mar 2020

Test Report No: ERSIPL/TR/WA/052

Name and Address of the Customer	:	Kalarangiatta Chromite Mines of M/S FACOR LTD
Date of Sampling	:	27-28.02.2020
Sample Collected by	:	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	:	Representative of the client
Sample Received on	:	02.03.2020
Analysis Started on	:	03.03.2020
Analysis Completed on	:	07.03.2020
Method of Sampling	:	IS 3025: Part 1: 1987, Reaffirmed 2014
Quantity of Sample	:	2litrs
Type of Container	:	Glass Bottle & HDPE Bottle
Environment Condition	:	All Tests carried out in Room Temperature

Sampling Location Specification

ERSIPL/WA/1766
ERSIPL/WA/1767
ERSIPL/WA/1768
ERSIPL/WA/1769
ERSIPL/WA/1770

GWQ1- Tube well water near TISCO main gate
GWQ2- Tube well inside the lease hold area
GWQ3- Open well water of Ransol
GWQ4- Tube well water of Kalarangiatta
GWQ5- Tube well water of Bhimtangar

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result				
					ERSIPL/WA/1766	ERSIPL/WA/1767	ERSIPL/WA/1768	ERSIPL/WA/1769	ERSIPL/WA/1770
01	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.7	0.5	0.1	0.7	0.1
02	pH	IS 3025:Part 11: 1983 Reaffirmed-2017	No	6.5 to 8.5	6.98	7.18	6.20	7.14	7.34
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2014	mg/L	200.0	244.0	192.0	94.0	226.0	232.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2014	mg/L	0.3	<0.07	<0.07	<0.07	<0.07	<0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2014	mg/L	250.0	16.63	14.67	18.59	17.61	21.52
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2014	mg/L	500.0	238.0	258.0	111.2	266.0	254.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2014	mg/L	75.0	28.85	29.66	12.02	29.66	20.84
08	Magnesium as Mg	IS 3025 (Part 46):1994, Reaffirmed -2014	mg/L	30.0	41.88	28.70	15.58	37.01	43.83
09	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2014	mg/L	200.0	3.37	3.00	2.62	2.87	4.25
10	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2013	mg/L	1.0	<0.1	<0.1	<0.1	<0.1	<0.1
11	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2014	mg/L	200.0	244.0	186.0	100.0	242.0	238.0



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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/40
ANALYSIS REPORT OF GROUND WATER SAMPLE
(For Feb-2020)

Page 1 of 2

Date: 11 Mar 2020

Name and Address of the Customer :

Date of Sampling :

Sample Collected by :

Sample Collected in presence of :

Sample Received on :

Analysis Started on :

Analysis Completed on :

Method of Sampling :

Quantity of Sample :

Type of Container :

Environment Condition :

Sampling Location Specification :

1. ERSIPL/WA/1766
2. ERSIPL/WA/1767
3. ERSIPL/WA/1768
4. ERSIPL/WA/1769
5. ERSIPL/WA/1770

Test Report No: ERSIPL/TR/WA/52T

Kalarangiatta Chromite Mines of M/S FACOR LTD

27-28.02.2020

Representative of ERS (I) Pvt. Ltd.

Representative of the client

02.03.2020

03.03.2020

07.03.2020

IS 3025: Part 1: 1987, Reaffirmed 2014

2ltrs

Glass Bottle & HDPE Bottle

All Tests carried out in Room Temperature

GWQ1- Tube well water near TISCO main gate

GWQ2- Tube well inside the lease hold area

GWQ3- Open well water of Ransol

GWQ4- Tube well water of Kalarangiatta

GWQ5- Tube well water of Bhimtangar

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result				
					ERSIPL/WA/1766	ERSIPL/WA/1767	ERSIPL/WA/1768	ERSIPL/WA/1769	ERSIPL/WA/1770
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A	A
04	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2014	mg/L	0.2 (min)	Nil	Nil	Nil	Nil	Nil
05	Copper	IS 3025:Part 42: 1992 Reaffirmed-2014	mg/L	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
06	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
07	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2014	mg/L	45.0	<5.0	<5.0	<5.0	<5.0	<5.0
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2014	mg/L	0.001	ND	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2014	mg/L	0.001	ND	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2014	mg/L	0.003	ND	ND	ND	ND	ND
11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND	ND

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Page 2 of 2

12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2014	mg/L	0.05	ND	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2014	mg/L	5.0	<0.1	<0.1	<0.1	<0.1	<0.1
16	Anionicdetergents	IS 13428 :2005 Reaffirmed-2014	mg/L	0.2	ND	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2014	mg/L	0.05	0.11	0.04	0.12	0.16	0.14
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2014	mg/L	0.5	ND	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2014	mg/L	0.03	ND	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2014	mg/L	0.02	ND	ND	ND	ND	ND

ND - Not Detected

.....END OF TEST REPORT.....

(Authorized Signatory)

S.P.Pattanayak
Tech.Manager



भारत सरकार
केन्द्रीय भूमि जल प्राधिकरण
जल संसाधन, नदी विकास
और गंगा संरक्षण मंत्रालय

Government of India
Central Ground Water Authority
Ministry of Water Resources,
River Development & Ganga Rejuvenation

Regional Director

File No: - 21-4/1457/OR/MIN/2017 - 1766

NOC No: - CGWA/NOC/MIN/ORIG/2018/3980

Date:- 12 SEP 2018

To ✓

M/s Facor Ltd.
Kalarangiatta Chromite Mines, C/O Ostapal Chromite Mines,
AT Gurujang, PO Kaliapani, Block Sukinda,
District Jajapur, Odisha - 755028

Sub: - NOC for ground water withdrawal to M/s Facor Ltd. in respect of their existing "Kalarangiatta Chromite Mines" located at AT/PO Kalarangiatta, Village Kalarangiata (CT), Block Sukinda, District Jajapur, Odisha – reg.

Refer to your application for grant of NOC for ground water withdrawal dated 27/12/2017. Based on recommendations of Regional Director, Central Ground Water Board, Central Ground Water Board, South Eastern Region, Bhubaneswar vide his letter dated 17/06/2018 and further deliberations on the subject, the NOC of Central Ground Water Authority for ground water withdrawal is hereby accorded to **M/s Facor Ltd. in respect of their existing "Kalarangiatta Chromite Mines" located at AT/PO Kalarangiatta, Village Kalarangiata (CT), Block Sukinda, District Jajapur, Odisha.** The NOC is valid from 07/08/2018 to 06/08/2020 and is subject to the following conditions:-

1. The firm may abstract **20 cu.m/day** of ground water (and not exceeding **7,300 cu.m/year**) through one (1) existing bore well and **700 cu.m/day** (not exceeding **2,55,500 cu.m/year**) through dewatering mine seepage through one (1) existing mine pit on account of mining intersecting the water table. The total withdrawal should not exceed **720 cu.m/day** (not exceeding **2,62,800 cu.m/year**). No additional dewatering and ground water abstraction structure shall be constructed for this purpose without prior approval of the CGWA. Any unexpected variation in inflow of ground water into the mine pit should be reported to the concerned Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar.
2. The well and dewatering structure shall be fitted with digital water meters by the firm at its own cost and monitoring of monthly ground water abstraction data of each water abstraction structure shall be recorded in a log book. Compliance to this condition shall be reported within one month from the date of issue of this letter.
3. **M/s Facor Ltd.**, in consultation with the Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar shall implement ground water recharge measures atleast to the tune of **43,690 cu.m/year** as proposed, for augmenting the ground water resources of the area where post monsoon water level is more than 5 meter below ground level. Firm shall report the compliance within six months from the date of issuance of this letter. Firm shall also undertake periodic maintenance of recharge structures at its own cost.
4. The photographs of the recharge structures after completion of construction of the same shall be furnished immediately to the Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar for verification under intimation to this office.

18/11, Jamnagar House, Mansingh Road, New Delhi-110011
Phone : (011) 23383561 Fax : 23382051, 23386743
Website: www.cgwa.noc.gov.in

स्वच्छ सुरक्षित जल - सुन्दर खुशहाल कल

CONSERVE WATER - SAVE LIFE

5. The firm, at its own cost, shall construct two (2) observation wells (piezometers) at suitable locations and install digital water level recorders along the periphery of the mine for monthly ground water level monitoring. Further, the firm shall execute ground water level monitoring four (4) times a year (January, May, August and November) in core and buffer zone by establishing sufficient number of key wells in consultation with the Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar. Firm shall install telemetry system on one of its piezometers and share the user ID and password of the telemetry system with the Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar.
6. The ground water quality shall be monitored once in a year (during pre monsoon period).
7. The monitoring data in respect of S. No. 2, 5 & 6 shall be submitted to the Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar on regular basis at least once in a year.
8. The firm shall ensure proper recycling and reuse of waste water after adequate treatment.
9. Action taken report in respect of S. No. 1 to 8 shall be submitted to CGWA within one year period.
10. The NOC is liable to be cancelled in case of non-compliance of any of the conditions as mentioned in S. No. 1 to 9.
11. This NOC is subject to prevailing Central/State Government rules/laws or Court orders related to construction of tubewell/ground water withdrawal/construction of recharge or conservation structure/discharge of effluents or any such matter as applicable.
12. The firm shall report self compliance online in the website (www.cgwa-noc.gov.in) within one year from the date of issue of this NOC.
13. This NOC does not absolve the applicant / proponent of this obligation / requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
14. The NOC does not imply that other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would consider the project on merits and be taking decisions independently of the NOC.



Regional Director

Copy to:

1. The Member Secretary, Odisha Pollution Control Board, Paribesh Bhawan, A/118, Nilakantha Nagar, Unit- VIII, Bhubaneswar- 751012, Odisha **with a request to ensure that the conditions mentioned in the NOC are complied by the firm in consultation with the District Collector & Magistrate, District Jajapur, Odisha.**
2. The District Collector & Magistrate, District Jajapur, Odisha for necessary action.
3. The Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar. This has reference to your recommendation dated 17/06/2018.
4. Guard File 2018-19.



Regional Director



Environmental Research and Services (India) Pvt. Ltd.

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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC744019000000356F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Nov-2019)

Pg No: 1 of 1

Date: 11 Dec 2019

Test Report No: ERSIPL/TR/AA/367

Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of the Client.
Date of Sampling/Monitoring : 29.11.2019
Sample Received on : 02.12.2019
Analysis Started on : 03.12.2019
Analysis Completed on : 07.12.2019
Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

Locations

- | | |
|--|----------------------------------|
| 1. ERSIPL/AA/2351 (Fugitive Emission) | 1. AQF1-Near Mines Ore Plot Area |
| 2. ERSIPL/AA/ 2352 (Fugitive Emission) | 2. AQF2-Near Office |

TEST FINDINGS:

Sl. No	Test Parameters	Test Method	Unit	Results*	
				ERSIPL/AA/2351	ERSIPL/AA/2352
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part4)-1999, Reaffirmed 2014, Gravimetric Method	µg/m ³	207.84	227.10

*Monitoring carried out with control measures


(Authorized Signatory)
S.P.Pattanayak
Tech. Manager

.....END OF TEST REPORT...



Environmental Research and Services (India) Pvt. Ltd.

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC744020000000123F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Feb-2020)

Pg No: 1 of 1

Date: 11 Mar 2020

Test Report No: ERSIPL/TR/AA/58

Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD.
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.
 Sample Collected in presence of : Representative of the Client.
 Date of Sampling/Monitoring : 26.02.2020
 Sample Received on : 02.03.2020
 Analysis Started on : 03.03.2020
 Analysis Completed on : 07.03.2020
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014
 Quantity of Sample : 01 sample for each parameter
 Environment Condition : Sunny

Sample ID. No.

Locations

- | | |
|--|----------------------------------|
| 1. ERSIPL/AA/2634 (Fugitive Emission) | 1. AQF1-Near Mines Ore Plot Area |
| 2. ERSIPL/AA/ 2635 (Fugitive Emission) | 2. AQF2-Near Office |

TEST FINDINGS:

Sl. No	Test Parameters	Test Method	Unit	Results*	
				ERSIPL/AA/2634	ERSIPL/AA/2635
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part4)-1999, Reaffirmed 2014, Gravimetric Method	$\mu\text{g}/\text{m}^3$	154.58	199.42

*Monitoring carried out with control measures


 (Authorized Signatory)
 S.P. Pattanayak
 Tech. Manager

.....END OF TEST REPORT...

CALENDAR PLAN INCLUDING EXCAVATION, QUANTUM OF MINERAL CHROMITE & WASTE GENERATED DURING THE PERIOD 2019-2020 IN KALARANGIATTA CHROMITE MINES

SL. NO.	MATERIALS	CALENDER PLAN PER ANNUM (2019-20)	QUANTITY GENERATED DURING THE PERIOD FROM APRIL, 2019 TO MARCH 2020
01.	CHROME ORE	49,566.00 TONNES	48,920.00 TONNES
02.	WASTE OVER BURDEN	1,46,590.00M ³	51,240.00M ³


Mines Manager
Kalarangiatta Chromite Mines
M/s. FACOR LTD.
Po-Kalarangiatta
Dist. Sreeperumthurai



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025:2005 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001:2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC744019000000301P

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For OCT-2019)

Pg No: 1 of 1

Date: 05 Nov 2019
Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of the Client.
Date of Sampling/Monitoring : 29-30.10.2019
Sample Received on : 01.11.2019
Analysis Started on : 01.11.2019
Analysis Completed on : 05.11.2019
Method of Sampling : IS 5182: Part 5: 1975, Reaffirmed 2014
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Test Report No: ERSIPL/TR/AA/340

Sample ID. No.

1. ERSIPL/AA/2238
2. ERSIPL/AA/2239
3. ERSIPL/AA/2240
4. ERSIPL/AA/2241

Locations (Core Zone)

1. Near Office Building
2. Near ETP
3. At Middle of the Opencast Quarry
4. Near Ore Plot Area

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2238	ERSIPL/AA/2239	ERSIPL/AA/2240	ERSIPL/AA/2241
1	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed - 2017, Gravimetric Method	µg/m ³	100.0	73.80	82.02	70.69	65.79
2	Particulate Matter (size less than 2.5 µm) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	µg/m ³	60.0	30.14	30.02	33.87	28.70
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	<6.0	8.83	7.68	8.70



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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed - 2017	µg/m ³	80.0	12.85	13.51	15.92	11.95
5	Carbon Monoxide (CO)	By CO Monitor	mg/m ³	2.0	<1.14	<1.14	<1.14	<1.14
6	Ozone (O ₃) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011.	µg/m ³	100.0	14.6	12.2	10.6	8.4
7	Lead (Pb)		µg/m ³	1.0	ND	ND	ND	ND
8	Arsenic (As)		ng/m ³	6.0	ND	ND	ND	ND
9	Nickel (Ni)		ng/m ³	20.0	ND	ND	ND	ND
10	Ammonia (NH ₃)		µg/m ³	400.0	ND	ND	ND	ND
11	Benzene (C ₆ H ₆)		µg/m ³	5.0	ND	ND	ND	ND
12	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m ³	1.0	ND	ND	ND	ND

*Monitoring carried out with control measures

Note: ND = Not Detected

.....END OF TEST REPORT.....


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Nov-2019)

Pg No: 1 of 1

Date: 11 Dec 2019
Test Report No: ERSIPL/TR/AA/365T
 Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD.
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.
 Sample Collected in presence of : Representative of the Client.
 Date of Sampling/Monitoring : 29-30.11.2019
 Sample Received on : 02.12.2019
 Analysis Started on : 03.12.2019
 Analysis Completed on : 07.12.2019
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014
 Quantity of Sample : 01 sample for each parameter
 Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/2342
2. ERSIPL/AA/2343
3. ERSIPL/AA/2344
4. ERSIPL/AA/2345

Locations (Core Zone)

1. Near Office Building
2. Near ETP
3. At Middle of the Opencast Quarry
4. Near Ore Plot Area

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2342	ERSIPL/AA/2343	ERSIPL/AA/2344	ERSIPL/AA/2345
1	Ozone (O ₃) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m ³	100.0	16.0	14.2	10.6	10.4
2	Carbon Monoxide (CO)		mg/m ³	2.0	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		µg/m ³	1.0	ND	ND	ND	ND
4	Arsenic (As)		ng/m ³	6.0	ND	ND	ND	ND
5	Nickel (Ni)		ng/m ³	20.0	ND	ND	ND	ND
6	Ammonia (NH ₃),		µg/m ³	400.0	ND	ND	ND	ND
7	Benzene (C ₆ H ₆),		µg/m ³	5.0	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m ³	1.0	ND	ND	ND	ND

*Monitoring carried out with control measures
 Note: ND = Not Detected

.....END OF TEST REPORT.....


 (Authorized Signatory)
S.P. Pattanayak
 Tech. Manager



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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibsr@gmail.com

ULR-TC744019000000354F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Nov-2019)

Pg No: 1 of 1

Date: 11 Dec 2019

Test Report No: ERSIPL/TR/AA/365

Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD.
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.
 Sample Collected in presence of : Representative of the Client.
 Date of Sampling/Monitoring : 29-30.11.2019
 Sample Received on : 02.12.2019
 Analysis Started on : 03.12.2019
 Analysis Completed on : 07.12.2019
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014
 Quantity of Sample : 01 sample for each parameter
 Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/2342
2. ERSIPL/AA/2343
3. ERSIPL/AA/2344
4. ERSIPL/AA/2345

Locations (Core Zone)

1. Near Office Building
2. Near ETP
3. At Middle of the Opencast Quarry
4. Near Ore Plot Area

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2342	ERSIPL/AA/2343	ERSIPL/AA/2344	ERSIPL/AA/2345
1	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	µg/m ³	100.0	65.70	76.17	67.21	72.13
2	Particulate Matter (size less than 2.5 µm) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	µg/m ³	60.0	28.57	32.64	36.58	28.14
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	<6.0	6.40	9.42	8.82
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed - 2017	µg/m ³	80.0	12.48	15.71	11.61	12.00

*Monitoring carried out with control measures

.....END OF TEST REPORT.....


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Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Dec-2019)

Pg No: 1 of 1

Date: 04 Jan 2020	Test Report No: ERSIPL/TR/AA/07T
Name and Address of the Customer	: Kalarangiatta Chromite Mines of M/S FACOR LTD.
Sample Collected by	: Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	: Representative of the Client.
Date of Sampling/Monitoring	: 28-29.12.2019
Sample Received on	: 31.12.2019
Analysis Started on	: 01.01.2020
Analysis Completed on	: 04.01.2020
Method of Sampling	: IS 5182 : Part 5 : 1975, Reaffirmed 2014
Quantity of Sample	: 01 sample for each parameter
Environment Condition	: Sunny

Sample ID. No.

1. ERSIPL/AA/2436
2. ERSIPL/AA/2437
3. ERSIPL/AA/2438
4. ERSIPL/AA/2439

Locations (Core Zone)

1. Near Office Building
2. Near ETP
3. At Middle of the Opencast Quarry
4. Near Ore Plot Area

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2436	ERSIPL/AA/2437	ERSIPL/AA/2438	ERSIPL/AA/2439
1	Ozone (O ₃) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m ³	100.0	12.4	10.6	11.8	10.2
2	Carbon Monoxide (CO)		mg/m ³	2.0	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		µg/m ³	1.0	ND	ND	ND	ND
4	Arsenic (As)		ng/m ³	6.0	ND	ND	ND	ND
5	Nickel (Ni)		ng/m ³	20.0	ND	ND	ND	ND
6	Ammonia (NH ₃),		µg/m ³	400.0	ND	ND	ND	ND
7	Benzene (C ₆ H ₆),		µg/m ³	5.0	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m ³	1.0	ND	ND	ND	ND

*Monitoring carried out with control measures
Note:ND = Not Detected

..... END OF TEST REPORT.....


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



GSTIN : 21AAACE6224D1ZE



Certificate No. : TC-7440

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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.comULR-TC74402000000012F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Dec-2019)

Pg No: 1 of 1

Date: 04 Jan 2020

Name and Address of the Customer :
Sample Collected by :

Sample Collected in presence of :

Date of Sampling/Monitoring :

Sample Received on :

Analysis Started on :

Analysis Completed on :

Method of Sampling :

Quantity of Sample :

Environment Condition :

Test Report No: ERSIPL/TR/AA/07

Kalarangiatta Chromite Mines of M/S FACOR LTD.

Representative of ERS (I) Pvt. Ltd.

Representative of the Client.

28-29.12.2019

31.12.2019

01.01.2020

04.01.2020

IS 5182 : Part 5 : 1975, Reaffirmed 2014

01 sample for each parameter

Sunny

Sample ID. No.

- ERSIPL/AA/2436
- ERSIPL/AA/2437
- ERSIPL/AA/2438
- ERSIPL/AA/2439

Locations (Core Zone)

- Near Office Building
- Near ETP
- At Middle of the Opencast Quarry
- Near Ore Plot Area

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov- 2009	Results			
					ERSIPL/ AA/ 2436	ERSIPL/ AA/ 2437	ERSIPL/ AA/ 2438	ERSIPL/ AA/ 2439
1	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	µg/m ³	100.0	59.64	71.57	71.06	75.34
2	Particulate Matter (size less than 2.5 µm) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	µg/m ³	60.0	35.11	37.02	26.83	30.02
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	7.76	6.60	7.31	7.38
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed - 2017	µg/m ³	80.0	12.93	16.52	15.43	10.03

*Monitoring carried out with control measures

(Authorized Signatory)

S.P. Pattanayak

Tech Manager



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Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Jan-2020)

Pg No: 1 of 1

Date: 04 Feb 2020

Test Report No: ERSIPL/TR/AA/32T

Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD.
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.
 Sample Collected in presence of : Representative of the Client.
 Date of Sampling/Monitoring : 25-26.01.2020
 Sample Received on : 31.01.2020
 Analysis Started on : 01.02.2020
 Analysis Completed on : 04.02.2020
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014
 Quantity of Sample : 01 sample for each parameter
 Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/2529
2. ERSIPL/AA/2530
3. ERSIPL/AA/2531
4. ERSIPL/AA/2532

Locations (Core Zone)

1. Near Office Building
2. Near ETP
3. At Middle of the Opencast Quarry
4. Near Ore Plot Area

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2529	ERSIPL/AA/2530	ERSIPL/AA/2531	ERSIPL/AA/2532
1	Ozone (O ₃) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m ³	100.0	10.6	12.6	10.0	16.4
2	Carbon Monoxide (CO)		mg/m ³	2.0	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		µg/m ³	1.0	ND	ND	ND	ND
4	Arsenic (As)		ng/m ³	6.0	ND	ND	ND	ND
5	Nickel (Ni)		ng/m ³	20.0	ND	ND	ND	ND
6	Ammonia (NH ₃),		µg/m ³	400.0	ND	ND	ND	ND
7	Benzene (C ₆ H ₆),		µg/m ³	5.0	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m ³	1.0	ND	ND	ND	ND

*Monitoring carried out with control measures

Note:ND = Not Detected

.....END OF TEST REPORT.....


 (Authorized Signatory)
 S.P. Pattanayak
 Tech. Manager



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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibsr@gmail.com

ULR-TC74402000000067F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Jan-2020)

Pg No: 1 of 1

Date: 04 Feb 2020

Test Report No: ERSIPL/TR/AA/32

Name and Address of the Customer	:	Kalarangiatta Chromite Mines of M/S FACOR LTD.
Sample Collected by	:	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	:	Representative of the Client.
Date of Sampling/Monitoring	:	25-26.01.2020
Sample Received on	:	31.01.2020
Analysis Started on	:	01.02.2020
Analysis Completed on	:	04.02.2020
Method of Sampling	:	IS 5182 : Part 5 : 1975, Reaffirmed 2014
Quantity of Sample	:	01 sample for each parameter
Environment Condition	:	Sunny

Sample ID. No.

1. ERSIPL/AA/2529
2. ERSIPL/AA/2530
3. ERSIPL/AA/2531
4. ERSIPL/AA/2532

Locations (Core Zone)

1. Near Office Building
2. Near ETP
3. At Middle of the Opencast Quarry
4. Near Ore Plot Area

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2529	ERSIPL/AA/2530	ERSIPL/AA/2531	ERSIPL/AA/2532
1	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	µg/m ³	100.0	67.44	78.24	82.37	72.16
2	Particulate Matter (size less than 2.5 µm) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	µg/m ³	60.0	25.21	33.72	38.92	28.97
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	<6.0	8.21	6.65	6.99
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed - 2017	µg/m ³	80.0	9.08	11.91	14.19	9.61

*Monitoring carried out with control measures

.....END OF TEST REPORT.....


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

ULR-TC74402000000121F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Feb-2020)

Pg No: 1 of 1

Date: 11 Mar 2020	Test Report No: ERSIPL/TR/AA/056
Name and Address of the Customer :	Kalarangiatta Chromite Mines of M/S FACOR LTD.
Sample Collected by :	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of :	Representative of the Client.
Date of Sampling/Monitoring :	26-27.02.2020
Sample Received on :	02.03.2020
Analysis Started on :	03.03.2020
Analysis Completed on :	07.03.2020
Method of Sampling :	IS 5182 : Part 5 : 1975, Reaffirmed 2014
Quantity of Sample :	01 sample for each parameter
Environment Condition :	Sunny

Sample ID. No.

1. ERSIPL/AA/2625
2. ERSIPL/AA/2626
3. ERSIPL/AA/2627
4. ERSIPL/AA/2628

Locations (Core Zone)

1. Near Office Building
2. Near ETP
3. At Middle of the Opencast Quarry
4. Near Ore Plot Area

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2625	ERSIPL/AA/2626	ERSIPL/AA/2627	ERSIPL/AA/2628
1	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	µg/m ³	100.0	74.86	75.67	71.36	67.66
2	Particulate Matter (size less than 2.5 µm) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	µg/m ³	60.0	35.75	30.53	29.62	26.27
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	7.21	6.12	6.41	7.68
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed - 2017	µg/m ³	80.0	14.79	15.16	10.65	12.18

*Monitoring carried out with control measures

.....END OF TEST REPORT.....


 (Authorized Signatory)
S.P. Pattanayak
 Tech. Manager



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Tel: +91-9437143248, +91-9937690329 , E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Feb-2020)

Pg No: 1 of 1

Date: 11 Mar 2020

Test Report No: ERSIPL/TR/AA/56T

Name and Address of the Customer	:	Kalarangiatta Chromite Mines of M/S FACOR LTD.
Sample Collected by	:	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	:	Representative of the Client.
Date of Sampling/Monitoring	:	26-27.02.2020
Sample Received on	:	02.03.2020
Analysis Started on	:	03.03.2020
Analysis Completed on	:	07.03.2020
Method of Sampling	:	IS 5182 : Part 5 : 1975, Reaffirmed 2014
Quantity of Sample	:	01 sample for each parameter
Environment Condition	:	Sunny

Sample ID. No.

1. ERSIPL/AA/2625
2. ERSIPL/AA/2626
3. ERSIPL/AA/2627
4. ERSIPL/AA/2628

Locations (Core Zone)

1. Near Office Building
2. Near ETP
3. At Middle of the Opencast Quarry
4. Near Ore Plot Area

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2625	ERSIPL/AA/2626	ERSIPL/AA/2627	ERSIPL/AA/2628
1	Ozone (O ₃) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m ³	100.0	14.5	18.8	12.4	14.2
2	Carbon Monoxide (CO)		mg/m ³	2.0	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		µg/m ³	1.0	ND	ND	ND	ND
4	Arsenic (As)		ng/m ³	6.0	ND	ND	ND	ND
5	Nickel (Ni)		ng/m ³	20.0	ND	ND	ND	ND
6	Ammonia (NH ₃),		µg/m ³	400.0	ND	ND	ND	ND
7	Benzene (C ₆ H ₆),		µg/m ³	5.0	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m ³	1.0	ND	ND	ND	ND

*Monitoring carried out with control measures
Note:ND = Not Detected

.....END OF TEST REPORT.....


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC74402000000133F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Mar-2020)

Pg No: 1 of 1

Date: 20 Mar 2020

Test Report No: ERSIPL/TR/AA/63

Name and Address of the Customer	:	Kalarangiatta Chromite Mines of M/S FACOR LTD.
Sample Collected by	:	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	:	Representative of the Client.
Date of Sampling/Monitoring	:	11-13.03.2020
Sample Received on	:	16.03.2020
Analysis Started on	:	16.03.2020
Analysis Completed on	:	19.03.2020
Method of Sampling	:	IS 5182 : Part 5 : 1975, Reaffirmed 2014
Quantity of Sample	:	01 sample for each parameter
Environment Condition	:	Sunny

Sample ID. No.

1. ERSIPL/AA/2643 (11.03.2020)
2. ERSIPL/AA/2644 (12.03.2020)
3. ERSIPL/AA/2645 (11.03.2020)
4. ERSIPL/AA/2646 (12.03.2020)

Locations (Core Zone)

1. Near Office Building
2. Near ETP
3. At Middle of the Opencast Quarry
4. Near Ore Plot Area

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2643	ERSIPL/AA/2644	ERSIPL/AA/2645	ERSIPL/AA/2646
1	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	µg/m ³	100.0	72.83	79.40	72.31	64.76
2	Particulate Matter (size less than 2.5 µm) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	µg/m ³	60.0	27.30	31.77	32.07	35.17
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	7.38	7.09	6.90	8.28
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed - 2017	µg/m ³	80.0	10.83	14.67	16.85	12.16

*Monitoring carried out with control measures


(Authorized Signatory)

S.P. Pattanayak
Tech. Manager

Environmental Research and Services (India) Pvt. Ltd.

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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Mar-2020)

Pg No: 1 of 1

Date: 20 Mar 2020

Test Report No: ERSIPL/TR/AA/63T
Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of the Client.
Date of Sampling/Monitoring : 11-13.03.2020
Sample Received on : 16.03.2020
Analysis Started on : 16.03.2020
Analysis Completed on : 19.03.2020
Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/2643 (11.03.2020)
2. ERSIPL/AA/2644 (12.03.2020)
3. ERSIPL/AA/2645 (11.03.2020)
4. ERSIPL/AA/2646 (12.03.2020)

Locations (Core Zone)

1. Near Office Building
2. Near ETP
3. At Middle of the Opencast Quarry
4. Near Ore Plot Area

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2643	ERSIPL/AA/2644	ERSIPL/AA/2645	ERSIPL/AA/2646
1	Ozone (O ₃) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m ³	100.0	11.1	16.0	12.4	18.2
2	Carbon Monoxide (CO)		mg/m ³	2.0	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		µg/m ³	1.0	ND	ND	ND	ND
4	Arsenic (As)		ng/m ³	6.0	ND	ND	ND	ND
5	Nickel (Ni)		ng/m ³	20.0	ND	ND	ND	ND
6	Ammonia (NH ₃),		µg/m ³	400.0	ND	ND	ND	ND
7	Benzene (C ₆ H ₆),		µg/m ³	5.0	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m ³	1.0	ND	ND	ND	ND

*Monitoring carried out with control measures
Note: ND = Not Detected

.....END OF TEST REPORT.....


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC744019000000302P

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For OCT-2019)

Pg No: 1 of 1

Date: 05 Nov 2019 **Test Report No: ERSIPL/TR/AA/341**
Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of the Client.
Date of Sampling/Monitoring : 30-31.10.2019
Sample Received on : 01.11.2019
Analysis Started on : 01.11.2019
Analysis Completed on : 05.11.2019
Method of Sampling : IS 5182: Part 5: 1975, Reaffirmed 2014
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/2242
2. ERSIPL/AA/2243
3. ERSIPL/AA/2244(27-28.10.19)
4. ERSIPL/AA/2245
5. ERSIPL/AA/2246

Locations (Buffer Zone)

1. Near Village Bhimtangar
2. Near Village Ransol
3. Near Kaliapani Township
4. Near Village Godisahi
5. Near Village Baragaji

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results				
					ERSIPL / AA/ 2242	ERSIPL / AA/ 2243	ERSIPL / AA/ 2244	ERSIPL / AA/ 2245	ERSIPL / AA/ 2246
1	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed - 2017, Gravimetric Method	µg/m ³	100.0	78.24	80.39	64.30	78.48	71.59
2	Particulate Matter (size less than 2.5 µm) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	µg/m ³	60.0	30.21	29.44	26.55	31.87	31.74
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed- 2017, Improved West & Gaeke Method	µg/m ³	80.0	7.83	6.16	7.40	8.47	<6.0



GSTIN : 21AAACE6224D1ZE



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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com


Page2/2

4	Oxides of Nitrogen (NO _x)	IS 5182 Part 6): 2006, Reaffirmed - 2017	µg/m ³	80.0	13.78	10.16	12.29	15.88	9.54
5	Carbon Monoxide (CO)	By CO Monitor	mg/m ³	2.0	<1.14	<1.14	<1.14	<1.14	<1.14
6	Ozone (O ₃)8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m ³	100.0	12.4	10.7	10.6	10.2	10.2
7	Lead (Pb)		µg/m ³	1.0	ND	ND	ND	ND	ND
8	Arsenic (As)		ng/m ³	6.0	ND	ND	ND	ND	ND
9	Nickel (Ni)		ng/m ³	20.0	ND	ND	ND	ND	ND
10	Ammonia (NH ₃)		µg/m ³	400.0	ND	ND	ND	ND	ND
11	Benzene (C ₆ H ₆)		µg/m ³	5.0	ND	ND	ND	ND	ND
12	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m ³	1.0	ND	ND	ND	ND	ND

*Monitoring carried out with control measures

Note: ND = Not Detected

.....END OF TEST REPORT.....


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



Environmental Research and Services (India) Pvt. Ltd.

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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibsr@gmail.com

ULR-TC744019000000355F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Nov-2019)

Pg No: 1 of 1

Date: 11 Dec 2019

Name and Address of the Customer :

Sample Collected by :

Sample Collected in presence of :

Date of Sampling/Monitoring :

Sample Received on :

Analysis Started on :

Analysis Completed on :

Method of Sampling :

Quantity of Sample :

Environment Condition :

Test Report No: ERSIPL/TR/AA/366

Kalarangiatta Chromite Mines of M/S FACOR LTD.

Representative of ERS (I) Pvt. Ltd.

Representative of the Client.

30/01.11/12.2019

02.12.2019

03.12.2019

07.12.2019

IS 5182 : Part 5 : 1975, Reaffirmed 2014

01 sample for each parameter

Sunny

Sample ID. No.

1. ERSIPL/AA/2346
2. ERSIPL/AA/2347
3. ERSIPL/AA/2348
4. ERSIPL/AA/2349
5. ERSIPL/AA/2350

Locations (Buffer Zone)

1. Near Village Bhimtangar
2. Near Village Ransol
3. Near Kaliapani Township
4. Near Village Godisahi
5. Near Village Baragaji

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results				
					ERSIPL/AA/2346	ERSIPL/AA/2347	ERSIPL/AA/2348	ERSIPL/AA/2349	ERSIPL/AA/2350
1	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	µg/m ³	100.0	77.70	81.04	79.03	64.01	80.69
2	Particulate Matter (size less than 2.5 µm) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	µg/m ³	60.0	31.30	29.50	34.46	36.56	28.62
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	<6.0	6.02	6.57	8.15	<6.0
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed - 2017	µg/m ³	80.0	10.20	13.64	11.03	9.93	10.74

*Monitoring carried out with control measures

(Authorized Signatory)

S.P.Pattanayak
Tech. Manager

.....END OF TEST REPORT.....

Environmental Research and Services (India) Pvt. Ltd.

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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Nov-2019)

Pg No: 1 of 1

Date: 11 Dec 2019
Test Report No: ERSIPL/TR/AA/366T
 Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD.
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.
 Sample Collected in presence of : Representative of the Client.
 Date of Sampling/Monitoring : 30/01.11/12.2019
 Sample Received on : 02.12.2019
 Analysis Started on : 03.12.2019
 Analysis Completed on : 07.12.2019
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014
 Quantity of Sample : 01 sample for each parameter
 Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/2346
2. ERSIPL/AA/2347
3. ERSIPL/AA/2348
4. ERSIPL/AA/2349
5. ERSIPL/AA/2350

Locations (Buffer Zone)

1. Near Village Bhimtangar
2. Near Village Ransol
3. Near Kaliapani Township
4. Near Village Godisahi
5. Near Village Baragaji

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results				
					ERSIPL/AA/2346	ERSIPL/AA/2347	ERSIPL/AA/2348	ERSIPL/AA/2349	ERSIPL/AA/2350
1	Ozone (O ₃) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m ³	100.0	10.6	9.8	12.1	14.4	12.2
2	Carbon Monoxide (CO)		mg/m ³	2.0	<1.14	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		µg/m ³	1.0	ND	ND	ND	ND	ND
4	Arsenic (As)		ng/m ³	6.0	ND	ND	ND	ND	ND
5	Nickel (Ni)		ng/m ³	20.0	ND	ND	ND	ND	ND
6	Ammonia (NH ₃),		µg/m ³	400.0	ND	ND	ND	ND	ND
7	Benzene (C ₆ H ₆),		µg/m ³	5.0	ND	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m ³	1.0	ND	ND	ND	ND	ND

*Monitoring carried out with control measures

Note: ND = Not Detected


(Authorized Signatory)

.....END OF TEST REPORT.....

S.P.Pattanayak
Tech. Manager



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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC744020000000013F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Dec-2019)

Pg No: 1 of 1

Date: 04 Jan 2020

Test Report No: ERSIPL/TR/AA/08

Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD. Sample
 Collected by : Representative of ERS (I) Pvt. Ltd.
 Sample Collected in presence of : Representative of the Client.
 Date of Sampling/Monitoring : 29-30.12.2019
 Sample Received on : 31.12.2019
 Analysis Started on : 01.01.2020
 Analysis Completed on : 04.01.2020
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014
 Quantity of Sample : 01 sample for each parameter
 Environment Condition : Sunny

Sample ID. No.

Locations (Buffer Zone)

1. ERSIPL/AA/2440
2. ERSIPL/AA/2441
3. ERSIPL/AA/2442
4. ERSIPL/AA/2443
5. ERSIPL/AA/2444

1. Near Village Bhimtangar
2. Near Village Ransol
3. Near Kaliapani Township
4. Near Village Godisahi
5. Near Village Baragaji

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results				
					ERSIPL/AA/2440	ERSIPL/AA/2441	ERSIPL/AA/2442	ERSIPL/AA/2443	ERSIPL/AA/2444
1	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed 2017, Gravimetric Method	µg/m ³	100.0	76.96	62.60	73.48	74.61	62.41
2	Particulate Matter (size less than 2.5 µm) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	µg/m ³	60.0	27.56	35.07	28.46	29.61	25.64
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	6.87	7.03	7.56	6.99	7.42
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	µg/m ³	80.0	10.13	11.60	12.69	9.13	10.33

*Monitoring carried out with control measures

.....END OF TEST REPORT.....

(Authorized Signatory)
S.P.Pattanayak
 Tech.Manager

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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Dec-2019)

Pg No: 1 of 1

Date: 04 Jan 2020

Test Report No: ERSIPL/TR/AA/08T

Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD. Sample
Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of the Client.
Date of Sampling/Monitoring : 29-30.12.2019
Sample Received on : 31.12.2019
Analysis Started on : 01.01.2020
Analysis Completed on : 04.01.2020
Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/2440
2. ERSIPL/AA/2441
3. ERSIPL/AA/2442
4. ERSIPL/AA/2443
5. ERSIPL/AA/2444

Locations (Buffer Zone)

1. Near Village Bhimtangar
2. Near Village Ransol
3. Near Kaliapani Township
4. Near Village Godisahi
5. Near Village Baragaji

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results				
					ERSIPL/AA/2440	ERSIPL/AA/2441	ERSIPL/AA/2442	ERSIPL/AA/2443	ERSIPL/AA/2444
1	Ozone (O ₃) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m ³	100.0	12.8	10.2	16.2	12.6	10.1
2	Carbon Monoxide (CO)		mg/m ³	2.0	<1.14	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		µg/m ³	1.0	ND	ND	ND	ND	ND
4	Arsenic (As)		ng/m ³	6.0	ND	ND	ND	ND	ND
5	Nickel (Ni)		ng/m ³	20.0	ND	ND	ND	ND	ND
6	Ammonia (NH ₃),		µg/m ³	400.0	ND	ND	ND	ND	ND
7	Benzene (C ₆ H ₆),		µg/m ³	5.0	ND	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m ³	1.0	ND	ND	ND	ND	ND

*Monitoring carried out with control measures

Note: ND = Not Detected

.....END OF TEST REPORT.....


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC74402000000068F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Jan-2020)

Pg No: 1 of 1

Date: 04 Feb 2020

Test Report No: ERSIPL/TR/AA/33

Name and Address of the Customer	:	Kalarangiatta Chromite Mines of M/S FACOR LTD. Sample
Collected by	:	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	:	Representative of the Client.
Date of Sampling/Monitoring	:	26-27.01.2020
Sample Received on	:	31.01.2020
Analysis Started on	:	01.02.2020
Analysis Completed on	:	04.02.2020
Method of Sampling	:	IS 5182 : Part 5 : 1975, Reaffirmed 2014
Quantity of Sample	:	01 sample for each parameter
Environment Condition	:	Sunny

Sample ID. No.

1. ERSIPL/AA/2533
2. ERSIPL/AA/2534
3. ERSIPL/AA/2535
4. ERSIPL/AA/2536
5. ERSIPL/AA/2537

Locations (Buffer Zone)

1. Near Village Bhimtangar
2. Near Village Ransol
3. Near Kaliapani Township
4. Near Village Godisahi
5. Near Village Baragaji

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results				
					ERSIPL/AA/2533	ERSIPL/AA/2534	ERSIPL/AA/2535	ERSIPL/AA/2536	ERSIPL/AA/2537
1	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed 2017, Gravimetric Method	µg/m ³	100.0	67.93	71.45	75.35	77.91	72.94
2	Particulate Matter (size less than 2.5 µm) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	µg/m ³	60.0	25.33	34.65	36.54	27.15	32.95
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	7.22	6.60	6.64	8.25	7.35
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	µg/m ³	80.0	15.37	10.89	11.80	10.88	15.24

*Monitoring carried out with control measures

.....END OF TEST REPORT.....


(Authorized Signatory)

S.P. Pattanayak
Tech. Manager Page 7 of 12



GSTIN : 21AAACE6224D1ZE

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Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Jan-2020)

Pg No: 1 of 1

Date: 04 Feb 2020

Test Report No: ERSIPL/TR/AA/33T
Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD. Sample
Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of the Client.
Date of Sampling/Monitoring : 26-27.01.2020
Sample Received on : 31.01.2020
Analysis Started on : 01.02.2020
Analysis Completed on : 04.02.2020
Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/2533
2. ERSIPL/AA/2534
3. ERSIPL/AA/2535
4. ERSIPL/AA/2536
5. ERSIPL/AA/2537

Locations (Buffer Zone)

1. Near Village Bhimtangar
2. Near Village Ransol
3. Near Kaliapani Township
4. Near Village Godisahi
5. Near Village Baragaji

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results				
					ERSIPL/AA/2533	ERSIPL/AA/2534	ERSIPL/AA/2535	ERSIPL/AA/2536	ERSIPL/AA/2537
1	Ozone (O ₃) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m ³	100.0	10.6	14.1	12.5	10.4	14.0
2	Carbon Monoxide (CO)		mg/m ³	2.0	<1.14	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		µg/m ³	1.0	ND	ND	ND	ND	ND
4	Arsenic (As)		ng/m ³	6.0	ND	ND	ND	ND	ND
5	Nickel (Ni)		ng/m ³	20.0	ND	ND	ND	ND	ND
6	Ammonia (NH ₃),		µg/m ³	400.0	ND	ND	ND	ND	ND
7	Benzene (C ₆ H ₆),		µg/m ³	5.0	ND	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m ³	1.0	ND	ND	ND	ND	ND

*Monitoring carried out with control measures
Note: ND = Not Detected

.....END OF TEST REPORT.....

(Authorized Signatory)

S.P. Pattanayak
Tech. Manager



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2005 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibsr@gmail.com

ULR-TC74402000000122F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Feb-2020)

Pg No: 1 of 1

Date: 11 Mar 2020

Test Report No: ERSIPL/TR/AA/57

Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of the Client.
Date of Sampling/Monitoring : 28-29.02.2020
Sample Received on : 02.03.2020
Analysis Started on : 03.03.2020
Analysis Completed on : 07.03.2020
Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/2629
2. ERSIPL/AA/2630
3. ERSIPL/AA/2631
4. ERSIPL/AA/2632
5. ERSIPL/AA/2633

Locations (Buffer Zone)

1. Near Village Bhimtangar
2. Near Village Ransol
3. Near Kaliapani Township
4. Near Village Godisahi
5. Near Village Baragaji

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results				
					ERSIPL/AA/2629	ERSIPL/AA/2630	ERSIPL/AA/2631	ERSIPL/AA/2632	ERSIPL/AA/2633
1	Particulate Matter (size less than 10 µm) or PM ₁₀	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	µg/m ³	100.0	66.93	77.69	75.08	66.23	58.93
2	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	µg/m ³	60.0	37.82	33.54	32.55	27.39	31.85
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	8.72	7.87	7.28	<6.0	<6.0
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed - 2017	µg/m ³	80.0	12.05	11.53	9.96	10.35	11.67

*Monitoring carried out with control measures

.....END OF TEST REPORT.....

(Authorized Signatory)
S.P.Pattanayak
Tech. Manager



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Feb-2020)

Pg No: 1 of 1

Date: 11 Mar 2020

Test Report No: ERSIPL/TR/AA/57T

Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of the Client.
Date of Sampling/Monitoring : 28-29.02.2020
Sample Received on : 02.03.2020
Analysis Started on : 03.03.2020
Analysis Completed on : 07.03.2020
Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/2629
2. ERSIPL/AA/2630
3. ERSIPL/AA/2631
4. ERSIPL/AA/2632
5. ERSIPL/AA/2633

Locations (Buffer Zone)

1. Near Village Bhimtangar
2. Near Village Ransol
3. Near Kaliapani Township
4. Near Village Godisahi
5. Near Village Baragajii

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results				
					ERSIPL/AA/2629	ERSIPL/AA/2630	ERSIPL/AA/2631	ERSIPL/AA/2632	ERSIPL/AA/2633
1	Ozone (O3) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m ³	100.0	14.4	11.2	18.6	10.2	8.0
2	Carbon Monoxide (CO)		mg/m ³	2.0	<1.14	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		µg/m ³	1.0	ND	ND	ND	ND	ND
4	Arsenic (As)		ng/m ³	6.0	ND	ND	ND	ND	ND
5	Nickel (Ni)		ng/m ³	20.0	ND	ND	ND	ND	ND
6	Ammonia (NH ₃),		µg/m ³	400.0	ND	ND	ND	ND	ND
7	Benzene (C ₆ H ₆),		µg/m ³	5.0	ND	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m ³	1.0	ND	ND	ND	ND	ND

*Monitoring carried out with control measures
Note: ND = Not Detected

.....END OF TEST REPORT.....

(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2005 (NABL) Accredited Laboratory, OSPCEB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Certificate No. : TC-7440

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC744020000000134F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Mar-2020)

Pg No: 1 of 1

Date: 20 Mar 2020

Test Report No: ERSIPL/TR/AA/64

Name and Address of the Customer	:	Kalarangiatta Chromite Mines of M/S FACOR LTD. Sample
Collected by	:	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	:	Representative of the Client.
Date of Sampling/Monitoring	:	11-15.03.2020
Sample Received on	:	16.03.2020
Analysis Started on	:	16.03.2020
Analysis Completed on	:	19.03.2020
Method of Sampling	:	IS 5182 : Part 5 : 1975, Reaffirmed 2014
Quantity of Sample	:	01 sample for each parameter
Environment Condition	:	Sunny

Sample ID. No.

Locations (Buffer Zone)

1. ERSIPL/AA/2647 (12.03.2020)
2. ERSIPL/AA/2648 (11.03.2020)
3. ERSIPL/AA/2649 (14.03.2020)
4. ERSIPL/AA/2650 (11.03.2020)
5. ERSIPL/AA/2651 (12.03.2020)

1. Near Village Bhimtangar
2. Near Village Ransol
3. Near Kaliapani Township
4. Near Village Godisahi
5. Near Village Baragaji

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results				
					ERSIPL/AA/2647	ERSIPL/AA/2648	ERSIPL/AA/2649	ERSIPL/AA/2650	ERSIPL/AA/2651
1	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed 2017, Gravimetric Method	µg/m ³	100.0	77.24	75.65	78.70	68.76	70.89
2	Particulate Matter (size less than 2.5 µm) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	µg/m ³	60.0	27.74	30.66	36.40	34.91	32.15
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	9.08	<6.0	7.11	<6.0	7.38
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	µg/m ³	80.0	15.24	13.70	12.64	12.01	15.42

*Monitoring carried out with control measures

.....END OF TEST REPORT.....

(Authorized Signatory)
Tech. Manager

Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR) (For Mar-2020)

Pg No: 1 of 1

Date: 20 Mar 2020

Name and Address of the Customer :
Collected by :
Sample Collected in presence of :
Date of Sampling/Monitoring :
Sample Received on :
Analysis Started on :
Analysis Completed on :
Method of Sampling :
Quantity of Sample :
Environment Condition :

Test Report No: ERSIPL/TR/AA/64T

Kalarangiatta Chromite Mines of M/S FACOR LTD. Sample
Representative of ERS (I) Pvt. Ltd.
Representative of the Client.
11-15.03.2020
16.03.2020
16.03.2020
19.03.2020
IS 5182 : Part 5 : 1975, Reaffirmed 2014
01 sample for each parameter
Sunny

Sample ID. No.

Locations (Buffer Zone)

- ERSIPL/AA/2647 (12.03.2020)
- ERSIPL/AA/2648 (11.03.2020)
- ERSIPL/AA/2649 (14.03.2020)
- ERSIPL/AA/2650 (11.03.2020)
- ERSIPL/AA/2651 (12.03.2020)

- Near Village Bhimtangar
- Near Village Ransol
- Near Kaliapani Township
- Near Village Godisahi
- Near Village Baragaji

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results				
					ERSIPL/AA/2647	ERSIPL/AA/2648	ERSIPL/AA/2649	ERSIPL/AA/2650	ERSIPL/AA/2651
1	Ozone (O ₃) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m ³	100.0	17.2	15.8	10.5	12.6	10.2
2	Carbon Monoxide (CO)		mg/m ³	2.0	<1.14	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		µg/m ³	1.0	ND	ND	ND	ND	ND
4	Arsenic (As)		ng/m ³	6.0	ND	ND	ND	ND	ND
5	Nickel (Ni)		ng/m ³	20.0	ND	ND	ND	ND	ND
6	Ammonia (NH ₃),		µg/m ³	400.0	ND	ND	ND	ND	ND
7	Benzene (C ₆ H ₆),		µg/m ³	5.0	ND	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m ³	1.0	ND	ND	ND	ND	ND

*Monitoring carried out with control measures
Note: ND = Not Detected

.....END OF TEST REPORT.....


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : (NABL) Accredited Laboratory, OSPCR Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
 Tel: +91-9437143248, +91-9937690329 , E-mail: ersibbsr@gmail.com

NOISE LEVEL MEASUREMENT REPORT (For Nov-2019)

Date: 11 Dec 2019

Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD

Date of Monitoring : 29.11.2019

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of the client

Sl. No	Location		Result in dB (A)	
			Day Time (6.00 A. M. – 10.00 P.M.)	Night Time (10.00 P.M. – 6.00 A.M.)
1	Ambient	Near Middle of the quarry	57.9	50.2
2		Near Office	55.8	48.7

Ambient Noise Level Standards

Area Code	Category of Area / Zone	Limits in dB(A)	
		Day Time (6.00 a.m. to 10.00 p.m.)	Night Time (10.00 p.m. to 6.00 a.m.)
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

.....END OF TEST REPORT.....


 (Authorized Signatory)
S.P. Pattanayak
 Tech. Manager



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437143248, +91-9937690329 , E-mail: ersibbsr@gmail.com

NOISE LEVEL MEASUREMENT REPORT (For Feb-2020)

Date: 11 Mar 2020

Name and Address of the Customer : Kalarangiatta Chromite Mines of M/S FACOR LTD

Date of Monitoring : 27.02.2020

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of the client

Sl. No	Location		Result in dB (A)	
			Day Time (6.00 A. M. – 10.00 P.M.)	Night Time (10.00 P.M. – 6.00 A.M.)
1	Ambient	Near Middle of the quarry	58.6	50.7
2		Near Office	57.5	49.3

Ambient Noise Level Standards

Area Code	Category of Area / Zone	Limits in dB(A)	
		Day Time (6.00 a.m. to 10.00 p.m.)	Night Time (10.00 p.m. to 6.00 a.m.)
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

.....END OF TEST REPORT.....


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

Annexure No.-10

**DETAILS OF EXPENDITURE INCURRED ON ENVIRONMENTAL PROTECTION MEASURES
DURING THE YEAR 2019-20 AND PROPOSED BUDGETED AMOUNT FOR THE YEAR 2020-21
BYKALARANGIATTA CHROMITE MINES OF M/S FACOR LTD.**

Sl No.	I T E M	Expenses during the Year 2019-20 (in ₹)	Proposed budgeted amount for the year 2020-21 (in ₹)
1.	AFFORESTATION (Total 1674 nos.)		
	a. Seedlings @ ₹ 70/-each	1,17,180.00	1,28,898.00
	b. Fertilizer/Insecticide/Cow-dung @ Rs.20/-each	33,480.00	36,800.00
	c. Digging of Pits/Planting @ ₹ 40/- each	66,690.00	73,359.00
	d. Post Plantation care @ Rs. 120/- (Watering, Weeding, basin makingetc.)	2,00,880.00	2,20,968.00
	e. Supervising & watchman		
	Sub-Total	4,18,230.00	4,59,925.00
2.	WATERMANAGEMENT&TREATMENT		
	a. ETP Operation & Maintenance (including costs of chemical &Manpower)	18,36,200	20,19,820.00
	b. PowerConsumption	1,94,138.00	21,35,51.00
	c. Sludge disposal	32,643.00	35,907.00
	d. Water sampleanalysis	36,872.00	40559.00
	Sub-Total	20,99,853.00	23,09,837.00
3.	DUST SUPRESSION & AIR MONITORING		
	a. Water spraying at dust generating points by watertanker.	4,48,988.00	4,93,886.00
	b. Environmental monitoring (Air & Noise monitoring charges) & analysis by M/S Environmental Research andServices (India) Pvt. Ltd., Bhubaneswar.	1,74,800	1,92,280.00
	Sub-Total	6,23,788.00	6,86,166.00
	Grand Total	Rs.31,42,871/- Rs. 31.43 Lacs	Rs 34,55,928.00 Say Rs 34.55


**Mines Manager
Kalarangiatta Chromite Mines
M/s. FACOR LTD.
Po-Kalarangiatta
Dist-Jajpur-755023**