

**QUATERLY COMPLIANCE REPORT
(MARCH-2020 TO MAY-2020)**

**ON
ENVIRONMENTAL MONITORING**

AT

**LAKSHMIPUR GRAPHITE
BENEFICIATION PLANT**

**(M/s PRADHAN INDUSTRY)
KORAPUT**

Prepared by:-



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ISO 14001:2004
ISO 9001:2008
OHSAS 18001:2007

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METHODOLOGY OF ENVIRONMENTAL MONITORING STUDY

1.0 INTRODUCTION :

M/s Visiontek Consultancy Services Pvt. Ltd. carried out the environmental monitoring for the M/s Lakshmipur Graphite Beneficiation Plant, Koraput.

Environmental monitoring was carried out at various locations inside the plant site. The Monitoring was carried out with respect to the qualities of Ambient Air, Ground & Surface Water, Soil, Noise & Silica analysis AAQ.

2.0 STUDY PERIOD:

The study was conducted during month of from Mar 20 to May 20.

3.0 METHODOLOGY:

The environmental monitoring was carried out as per the standard methodology of Bureau of Indian Standard (IS: 11255), American Public Health Association (APHA), & Central Pollution Control Board (CPCB).

4.0 SELECTION OF MONITORING LOCATIONS:

The location for Ambient Air, Ground & Surface Water, Ground Water Level & Noise Level Survey has been selected by Laxmipur Graphite representative.

4.1 AMBIENT AIR QUALITY:

The ambient air quality (AAQ) of the study region was monitored at four locations selected within the premises. Ambient air quality (AAQ) in respect of Particulate Matter (size less than 10 µm or PM₁₀), Particulate matter (size less than 2.5 µm or PM_{2.5}), Sulphur di-oxide (SO₂), Oxides of Nitrogen (NO_x), Carbon Monoxide (CO), Ozone (O₃), Ammonia (NH₃), Nickel (Ni), Lead (Pb), Arsenic (As), Benzene (C₆H₆) and Benzo(a) Pyrene (BaP). Respirable Dust Sampler (APM 460BL) of ENVIROTECH make, FPS (APM) of ENVIROTECH make, Organic Vapour Sampler,



ENVIROTECH make, model APM 850 were used for monitoring of ambient air quality at all the identified locations. The sampling method was carried out as per the guidelines for planning IS: 5182 (part 14): 2000. And the analysis methods are outlined in the table as shown below:

AMBIENT AIR QUALITY ANALYSIS METHOD

SL. NO.	PARAMETER	ANALYSIS METHOD
1.	Particulate Matter (size less than 10 μm or PM_{10}), $\mu\text{g}/\text{m}^3$	Gravimetric method
2.	Particulate matter (size less than 2.5 μm or $\text{PM}_{2.5}$), $\mu\text{g}/\text{m}^3$	Gravimetric method
3.	Sulphur di-oxide (SO_2), $\mu\text{g}/\text{m}^3$	Improved west & Geake method
4.	Oxides of Nitrogen (NO_x), $\mu\text{g}/\text{m}^3$	Jacob and Hochheiser Modified method
5.	Carbon Monoxide (CO), mg/m^3	NDIR Spectroscopy method
6.	Ozone (O_3), $\mu\text{g}/\text{m}^3$	Chemical Method
7.	Ammonia (NH_3), $\mu\text{g}/\text{m}^3$	Indophenol Blue Method
8.	Benzene (C_6H_6), $\mu\text{g}/\text{m}^3$	Absorption & Desorption followed by GC analysis
9.	Benzo(a) Pyrene (BaP), ng/m^3	Solvent extraction followed by GC analysis.
10.	Nickel (Ni), ng/m^3	AAS method after sampling
11.	Lead (Pb), $\mu\text{g}/\text{m}^3$	AAS method after sampling
12.	Arsenic (As), ng/m^3	AAS method after sampling

4.1.1 AMBIENT AIR QUALITY SAMPLING STATIONS (CORE ZONE):

Details of the sampling locations are given below.

Field ID	Station
AAQ-1 (Core Zone)	Project Site

The detailed Ambient Air Quality report (Core Zone) is given in the **Annexure-1**.



4.1.2 AMBIENT AIR QUALITY SAMPLING STATIONS (BUFFER ZONE):

Details of the sampling locations are given below.

Field ID	Station
AAQ-1	Lakshmipur
AAQ-2	Katrankana
AAQ-3	Phunjisil
AAQ-4	Matalamba
AAQ-5	Bandikar
AAQ-6	Khalakara
AAQ-7	Dara

The detailed Ambient Air Quality report (Buffer Zone) is given in the **Annexure-2**.

4.2 WATER QUALITY:

Water quality monitoring was carried out at fourteen waste water locations. Samples were collected manually during study period. Considering several possibilities of interference the poly tetrafluoroethylene (PTFE) sample bottles were used. These bottles were sterilized properly before being used for water sample collection.

The methodology for sample collection, preservation and analysis was as per Standard methods for the Examination of Water and Wastewater, 23rd Edition, 2017 APHA.

WATER QUALITY ANALYSIS METHOD

SL.NO.	PARAMETER	TESTING METHOD
1	Colour	APHA 2120 B, C
2	Odour	APHA 2150 B
3	Taste	APHA 2160 C
4	Turbidity	APHA 2130 B
5	pH	APHA 4500H ⁺ B
6	Total Hardness (as CaCO ₃)	APHA 2340 C
7	Iron (as Fe)	APHA 3500Fe, B
8	Chloride (as Cl)	APHA 4500Cl ⁻ B
9	Residual Free Chlorine	APHA 4500Cl, B
10	Total Dissolved Solids	APHA 2540 C
11	Calcium as Ca	APHA 3500Ca B
12	Magnesium as Mg	APHA 3500Mg B
13	Copper as Cu	APHA 3111 B,C
14	Manganese as Mn	APHA 3500Mn B
15	Sulphate as SO ₄	APHA 4500 SO ₄ ²⁻ E
16	Nitrate as NO ₃	APHA 4500 NO ₃ ⁻ E
17	Fluoride as F	APHA 4500F ⁻ C



18	Phenolic Compounds as C ₆ H ₅ OH	APHA 5530 B,D
19	Mercury as Hg	APHA 3500 Hg
20	Cadmium as Cd	APHA 3111 B,C
21	Selenium as Se	APHA 3114 B
22	Arsenic as As	APHA 3114 B
23	Cyanide as CN	APHA 4500 CN ⁻ C,D
24	Lead as Pb	APHA 3111 B,C
25	Zinc as Zn	APHA 3111 B,C
26	Anionic Detergents as MBAS	APHA 5540 C
27	Chromium as Cr ⁺⁶	APHA 3500Cr B
28	Mineral Oil	APHA 5220 B
29	Alkalinity	APHA 2320 B
30	Aluminium as Al	APHA 3500Al B
31	Boron	APHA 4500B, B
32	Poly Aromatic Hydrocarbon as PAH	APHA 6440 B
33	Pesticides	APHA 6630 B,C

4.2.1 GROUND WATER SAMPLING LOCATIONS :

Detail of the sampling location is given below:

Field ID	Location
GW-1	Open Well at Bandikar
GW-2	Open Well at Near Doliamba
GW-3	Open Well at Rajanapanasagurha
GW-4	Open Well at Lakshmipur

The detailed Ground water analysis report is mentioned in Annexure-3.

4.2.2 SURFACE WATER SAMPLING LOCATIONS :

Detail of the sampling location is given below:

Field ID	Location
SW-1	Godabandha Nallah Near Plant Site
SW-2	Godabandha Nallah Near Nalachuan
SW-3	Jhanjabati Nadi Near Rumbuli
SW-4	Jhanjabati Nadi Near Panebarhi

The detailed Surface water analysis report is mentioned in Annexure-4.



4.3 SOIL SAMPLE:

Composite soil sampling was collected as defined location.

4.3.1 SOIL SAMPLING LOCATIONS :

Detail of the sampling location is given below:

Field ID	Location
S-1	Plant Site
S-2	Sapamba
S-3	Marabaigurha
S-4	Minapani RF
S-5	Rumbuli

The detailed Soil sample report is mentioned in **Annexure-5**

4.4 NOISE LEVEL MONITORING:

Noise Levels were recorded by Digital Sound Level Meter of LUTRON make at two locations within the plant premises. Monitoring was carried out once in a month at each location during the study period for day time and night time. According to CPCB (Noise Pollution (Regulation & Control) rules, 2000 day time is considered from 6.00 am to 10.00 pm and night time is considered from 10.00 pm to 6.00 am.

Locations of Noise level monitoring stations are as follows:

4.4.1 NOISE LEVEL SAMPLING STATIONS:

Field ID	Location ID
N-1	Project Site
N-2	Lakshmipur
N-3	Katrakana
N-4	Phunjisil
N-5	Matalamba
N-6	Bandipar
N-7	Khalakana
N-8	Dara

The detailed noise measurement data is given in **Annexure-6**.

4.5 SILICA ANALYSIS :

Silica Analysis in AAQ was measured by Spectrophotometer.



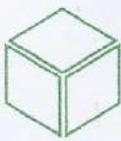
4.5.1 SILICA ANALYSIS SAMPLING STATIONS:

Field ID	Location ID
AAQ1	Project Site
AAQ2	Lakshmipur
AAQ3	Katrakana
AAQ4	Phunjisil

The detailed Silica Analysis data is given in Annexure-7.



**AMBIENT AIR QUALITY(CORE ZONE) ANALYSIS
REPORT**



Ref.:

Date:

AMBIENT AIR QUALITY MONITORING REPORT(CORE ZONE) MAR-MAY 20

1. Name of Industry : M/s Lakshampur Graphite Beneficiation Plant, Koraput
2. Sampling Location : Monitoring Station No.- AAQ 1(Project Site)
3. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550) Envirotech, CO Analyzer.
4. Sample Collected By : VCSPL representative in presence of Client's representative

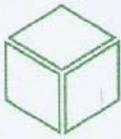
Date	PARAMETERS										Testing Method	
	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NOx ($\mu\text{g}/\text{m}^3$)	O ₃ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	NH ₃ ($\mu\text{g}/\text{m}^3$)	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)	As (ng/m^3)		C ₆ H ₆ ($\mu\text{g}/\text{m}^3$)
10.03.2020	50.8	30.48	5.6	10.8	5.6	0.26	31.2	BDL	BDL	BDL	BDL	BDL
11.03.2020	51.2	30.72	5.4	11.2	5.4	0.22	31.8	BDL	BDL	BDL	BDL	BDL
13.04.2020	48.8	29.28	4.8	11.6	6.1	0.18	32.6	BDL	BDL	BDL	BDL	BDL
14.04.2020	51.6	30.96	5.2	12.4	6.6	0.19	32.4	BDL	BDL	BDL	BDL	BDL
12.05.2020	53.2	31.92	5.4	12.8	6.2	0.21	33.2	BDL	BDL	BDL	BDL	BDL
13.05.2020	54.2	32.52	5.4	11.8	6.8	0.23	32.8	BDL	BDL	BDL	BDL	BDL
Monthly Average	51.63	30.98	5.30	11.77	6.12	0.22	32.33	BDL	BDL	BDL	BDL	BDL
CPCB, New Delhi AAQ Standard	100	60	80	80	100	4	400	1	20	6	5	1
	Gravimetric IS 5182: Part 23	Gravimetric EPA CFR-40 (01 50) Appendix-1	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Chemical Method IS 5182 (Part-9) RA2006	Non Dispersive Infrared Method IS 5182 (Part-10):1999	Indo Phenol Blue Method Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	AAS Method IS 5182/Part-22):2004	AAS Method USEPA/103.2	AAS Method USEPA/103.2	Gas Chromatogram by IS 5182 (Part-11):2006	Solvent Extraction IS 5182 (Part-12):2004



For Visiontek Consultancy Services Pvt. Ltd.

AMBIENT AIR QUALITY(BUFFER ZONE) ANALYSIS
REPORT





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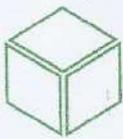
Date:

AMBIENT AIR QUALITY MONITORING REPORT(BUFFER ZONE) MAR-MAY 20

- 5. Name of Industry : M/s Lakshmpur Graphite Beneficiation Plant, Koraput
- 6. Sampling Locatio : Monitoring Station No.- AAQ 2 (Lakshmpur)
- 7. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550) Envirotech, CO Analyzer.
- 8. Sample Collected By : VCSPL Representative

Date	PARAMETERS											Testing Method
	PM _{1.0} (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NOx (µg/m ³)	O ₃ (µg/m ³)	CO (mg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	C ₆ H ₆ (µg/m ³)	
10.03.2020	50.6	30.36	5.6	10.4	5.6	0.18	30.8	BDL	BDL	BDL	BDL	BDL
11.03.2020	51.8	31.08	6.1	10.6	5.1	0.21	31.6	BDL	BDL	BDL	BDL	BDL
13.04.2020	51.2	30.72	6.6	11.2	5.8	0.22	32.8	BDL	BDL	BDL	BDL	BDL
14.04.2020	52.4	31.44	6.8	11.8	5.2	0.24	33.4	BDL	BDL	BDL	BDL	BDL
12.05.2020	53.1	31.86	7.2	10.7	5.6	0.26	34.6	BDL	BDL	BDL	BDL	BDL
13.05.2020	52.6	31.56	7.4	12.1	6.2	0.23	35.2	BDL	BDL	BDL	BDL	BDL
Monthly Average	51.95	31.17	6.62	11.13	5.58	0.22	33.07	BDL	BDL	BDL	BDL	BDL
CPCB, New Delhi AAQ Standard	100	60	80	80	100	4	400	1	20	6	5	1
	Gravimetric IS 5182: Part 23	Gravimetric EPA CER-40 (pt 50) Appendix-1	Improved West & Genke Method IS 5182 (Part-2) RA2006	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Chemical Method IS 5182 (Part-9) RA2006	Non Dispersive Infrared Method IS 5182 (Part-10):1999	Indio Phenol Blue Method Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	AAS Method IS 5182 (Part-22):2004	AAS Method USEPA/103.2	AAS Method USEPA/103.2	Gas Chromatograph by IS 5182 (Part-11):2006	Solvent Extraction IS 5182 (Part-12):2004


For Visiontek Consultancy Services Pvt. Ltd.



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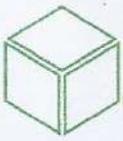
AMBIENT AIR QUALITY MONITORING REPORT (BUFFER ZONE) MAR-MAY 20

- 1. Name of Industry : M/s Lakshampur Graphite Beneficiation Plant, Koraput
- 2. Sampling Location : Monitoring Station No.- AAQ 3 (Katrakana)
- 3. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550) Envirotech, CO Analyzer.
- 4. Sample Collected By : VCSPL Representative

Date	PARAMETERS											Testing Method
	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)	O ₃ (µg/m ³)	CO (mg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	C ₆ H ₆ (µg/m ³)	
10.03.2020	54.2	36.36	6.6	8.4	7.8	0.22	28.8	BDL	BDL	BDL	BDL	BDL
11.03.2020	54.5	36.72	6.8	8.6	8.2	0.26	29.6	BDL	BDL	BDL	BDL	BDL
13.04.2020	55.1	37.68	7.1	9.2	8.9	0.24	28.6	BDL	BDL	BDL	BDL	BDL
14.04.2020	54.8	36.84	7.2	9.6	8.6	0.27	28.2	BDL	BDL	BDL	BDL	BDL
12.05.2020	52.3	36.12	7.4	10.2	8.8	0.28	26.8	BDL	BDL	BDL	BDL	BDL
13.05.2020	51.6	35.67	7.8	10.6	8.0	0.31	26.2	BDL	BDL	BDL	BDL	BDL
Monthly Average	53.75	36.56	7.15	9.43	8.38	0.26	28.03	BDL	BDL	BDL	BDL	BDL
CPCB, New Delhi AAQ Standard	100	60	80	80	100	4	400	1	20	6	5	1
	Gravimetric IS 5182: Part 23	Gravimetric EPA CFR-40 (pt 50) Appendix-1	Improved West & Geake Method IS 5182: Part-2 RA2006	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Chemical Method IS 5182 (Part-9) RA2006	Non Dispersive Infrared Method IS 5182 (Part-10):1999	Indo Phenol Blue Method Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	AAS Method IS 5182(Part-22):2004	AAS Method USEPA/103.2	AAS Method USEPA/103.2	Gas Chromatograph by IS 5182 (Part-11):2006	Solvent Extraction IS 5182 (Part-12):2004



For Visiontek Consultancy Services Pvt. Ltd.



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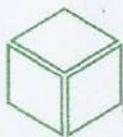
AMBIENT AIR QUALITY MONITORING REPORT (BUFFER ZONE) MAR-MAY 20

1. Name of Industry : M/s Lakshampur Graphite Beneficiation Plant , Koraput
 2. Sampling Location : Monitoring Station No.- AAQ 4 (Phunjisil)
 3. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550) Envirotech, CO Analyzer.
 4. Sample Collected By : VCSPL representative in presence of Client's representative

Date	PARAMETERS										Testing Method	
	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NOx ($\mu\text{g}/\text{m}^3$)	O ₃ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	NH ₃ ($\mu\text{g}/\text{m}^3$)	Pb ($\mu\text{g}/\text{m}^3$)	Ni ($\mu\text{g}/\text{m}^3$)	As ($\mu\text{g}/\text{m}^3$)		Cd,Hg ($\mu\text{g}/\text{m}^3$)
10.03.2020	58.8	35.28	5.6	13.6	7.8	0.36	32.4	BDL	BDL	BDL	BDL	BDL
11.03.2020	56.2	33.72	6.2	13.8	7.6	0.34	31.6	BDL	BDL	BDL	BDL	BDL
13.04.2020	55.4	33.24	6.6	14.2	7.4	0.32	30.8	BDL	BDL	BDL	BDL	BDL
14.04.2020	58.2	34.92	6.8	14.8	7.12	0.33	29.6	BDL	BDL	BDL	BDL	BDL
12.05.2020	59.6	35.76	7.4	15.2	7.1	0.31	30.4	BDL	BDL	BDL	BDL	BDL
13.05.2020	60.2	36.12	7.2	15.6	7.2	0.35	31.4	BDL	BDL	BDL	BDL	BDL
Monthly Average	58.07	34.84	6.63	14.53	7.37	0.34	31.03	BDL	BDL	BDL	BDL	BDL
CPCB, New Delhi AAQ Standard	100	60	80	80	100	4	400	1	20	6	5	1
	Gravimetric IS 5182: Part 25	Gravimetric EPA CFR-40 (pt 50) Appendix-1	Improved West & Graetz Method IS 5182 (Part-2) RA2006	Modified Jacob & Hochreiser Method IS 5182 (Part-6) RA2006	Chemical Method IS 5182 (Part-9) RA2006	Non Dispersive Infrared Method IS 5182 (Part-10):1999	Into Phenol Blue Method Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	AAS Method IS 5182 (Part-22):2004	AAS Method USEPA/103.2	AAS Method USEPA/103.2	Gas Chromatography IS 5182 (Part-11):2006	Solvent Extraction IS 5182 (Part-12):2004



For Visiontek Consultancy Services Pvt. Ltd.



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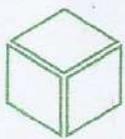
AMBIENT AIR QUALITY MONITORING REPORT (BUFFER ZONE) MAR-MAY 20

1. Name of Industry : M/s Lakshampur Graphite Beneficiation Plant, Koraput
2. Sampling Location : Monitoring Station No.- AAQ 5 (Matalamba)
3. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550) Envirotech, CO Analyzer.
4. Sample Collected By : VCSPL representative in presence of Client's representative

Date	PARAMETERS											Testing Method
	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NOx ($\mu\text{g}/\text{m}^3$)	O ₃ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	NH ₃ ($\mu\text{g}/\text{m}^3$)	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)	As (ng/m^3)	C ₆ H ₆ ($\mu\text{g}/\text{m}^3$)	
12.03.2020	55.7	35.76	5.21	12.8	8.1	0.31	31.6	BDL	BDL	BDL	BDL	BDL
13.03.2020	54.8	36.48	5.2	13.2	8.6	0.32	30.8	BDL	BDL	BDL	BDL	BDL
15.04.2020	55.2	36.84	5.6	13.4	8.3	0.36	31.4	BDL	BDL	BDL	BDL	BDL
16.04.2020	52.8	35.56	5.2	13.6	8.4	0.34	32.8	BDL	BDL	BDL	BDL	BDL
14.05.2020	51.8	35.04	4.8	12.2	8.2	0.28	33.4	BDL	BDL	BDL	BDL	BDL
15.05.2020	50.6	34.28	4.6	13.8	8.0	0.32	34.8	BDL	BDL	BDL	BDL	BDL
Monthly Average	53.48	35.66	5.10	13.17	8.27	0.32	32.47	BDL	BDL	BDL	BDL	BDL
CPCB, New Delhi AAQ Standard	100	60	80	80	100	4	400	1	20	6	5	1
	Gravimetric IS 5182: Part 23	Gravimetric EPA CFR-40 (pt 50) Appendix-1	Improved West & Genke Method IS 5182 (Part-2) RA2006	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Chemical Method IS 5182 (Part-9) RA2006	Non Dispersive Infrared Method IS 5182 (Part-10) RA2006	Indo Phenol Blue Method Air Sampling, 3rd Edn. By James P. Lodge (Method-101)	AAS Method IS 5182 (Part-23):2004	AAS Method USEPA/103.2	AAS Method USEPA/103.2	Gas Chromatography IS 5182 (Part-11):2006	Solvent Extraction IS 5182 (Part-12):2004



For Visiontek Consultancy Services Pvt. Ltd.



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Date:

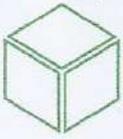
AMBIENT AIR QUALITY MONITORING REPORT (BUFFER ZONE) MAR-MAY 20

1. Name of Industry : M/s Lakshampur Graphite Beneficiation Plant, Koraput
2. Sampling Location : Monitoring Station No.- AAQ 6 (Bandikar)
3. Monitoring Instrument : RDS (APM 460 BL), FPS (APM 550) Envirotech, CO Analyzer.
4. Sample Collected By : VCSPL representative in presence of Client's representative

Date	PARAMETERS											
	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NOx ($\mu\text{g}/\text{m}^3$)	O ₃ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	NH ₃ ($\mu\text{g}/\text{m}^3$)	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)	As (ng/m^3)	C ₆ H ₆ ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)
12.03.2020	54.8	33.48	5.8	14.4	8.9	0.32	21.8	BDL	BDL	BDL	BDL	BDL
13.03.2020	54.6	32.76	5.6	13.8	8.6	0.34	22.6	BDL	BDL	BDL	BDL	BDL
15.04.2020	52.8	31.68	5.2	13.2	8.8	0.36	23.2	BDL	BDL	BDL	BDL	BDL
16.04.2020	51.6	30.96	6.2	13.4	9.2	0.38	23.8	BDL	BDL	BDL	BDL	BDL
14.05.2020	52.7	34.92	6.6	12.8	9.1	0.41	22.2	BDL	BDL	BDL	BDL	BDL
15.05.2020	52.6	35.16	6.8	12.6	9.4	0.42	24.1	BDL	BDL	BDL	BDL	BDL
Monthly Average	53.18	33.16	6.03	13.37	9.00	0.37	22.95	BDL	BDL	BDL	BDL	BDL
CPCB, New Delhi AAQ Standard	100	60	80	80	100	4	400	1	20	6	5	1
Testing Method	Gravimetric IS 5182: Part 23	Gravimetric EPA CFR-40 (pt 50) Appendix-1	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Chemical Method IS 5182 (Part-9) RA2006	Non Dispersive Infrared Method IS 5182 (Part-10) 1999	Indo Phenol Blue Method Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	AAS Method IS 5182(Part-22):2004	AAS Method USEPA/103.2	AAS Method USEPA/103.2	Gas Chromatogram by IS 5182 (Part-11):2006	Solvent Extraction IS 5182 (Part-12):2004



For Visiontek Consultancy Services Pvt. Ltd.



Ref.:

Date:

AMBIENT AIR QUALITY MONITORING REPORT (BUFFER ZONE) MAR-MAY 20

- 1. Name of Industry : M/s Lakshmipur Graphite Beneficiation Plant, Koraput
- 2. Sampling Location : Monitoring Station No.- AAQ 7 (Khalakara)
- 3. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550) Envirotech, CO Analyzer.
- 4. Sample Collected By : VCSPL representative in presence of Client's representative

Date	PARAMETERS											Testing Method
	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NOx ($\mu\text{g}/\text{m}^3$)	O ₃ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	NH ₃ ($\mu\text{g}/\text{m}^3$)	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)	As (ng/m^3)	C ₆ H ₆ ($\mu\text{g}/\text{m}^3$)	
12.03.2020	52.9	34.04	5.8	9.6	8.4	0.26	21.6	BDL	BDL	BDL	BDL	BDL
13.03.2020	52.5	34.92	6.2	10.2	8.8	0.28	22.8	BDL	BDL	BDL	BDL	BDL
15.04.2020	51.2	30.72	6.6	10.6	9.1	0.29	23.2	BDL	BDL	BDL	BDL	BDL
16.04.2020	51.0	32.76	5.6	10.8	9.2	0.32	23.8	BDL	BDL	BDL	BDL	BDL
14.05.2020	50.7	34.32	6.2	11.2	8.9	0.36	24.6	BDL	BDL	BDL	BDL	BDL
15.05.2020	50.3	34.12	6.4	9.2	8.6	0.34	24.2	BDL	BDL	BDL	BDL	BDL
Monthly Average	51.43	33.48	6.13	10.27	8.83	0.31	23.37	BDL	BDL	BDL	BDL	BDL
CPCB, New Delhi AAQ Standard	100	60	80	80	100	4	400	1	20	6	5	1
	Gravimetric IS 5182: Part 23	Gravimetric EPA CFR-40 (pt 50) Appendix-1	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Chemical Method IS 5182 (Part-5) RA2006	Non Dispersive Infrared Method IS 5182 (Part-10):1999	Indio Phenol Blue Method Air Sampling, 3rd Edn. by James P. Lodge (Method-401)	AAS Method IS 5182/Part-22:2004	AAS Method USEPA/103.2	AAS Method USEPA/103.2	Gas Chromatograph by IS 5182 (Part-11):2006	Solvent Extraction IS 5182 (Part-12):2004

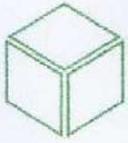


For Visiontek Consultancy Services Pvt. Ltd.

Annexure-3

GROUND WATER QUALITY REPORT





Ref.:

Date:

GROUND WATER QUALITY ANALYSIS REPORT MARCH- MAY 20

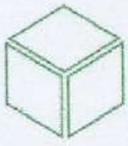
- 1. Name of Industry : M/s Lakshmipur Graphite Beneficiation Plant, Koraput
- 2. Sampling Location : GW-1: Open Well at Bandikar
- 3. Sample Collected By : VCSPL Representative in presence of Client's Representative

Sl.No.	Parameter	Unit	Testing Methods	Standard as per IS:10500:2012	Analysis Results				
					MAR-20	APR-20	MAY-20	Averages	
Essential Characteristics									
1.	Colour	Hazen	APHA 2120 B,C	5	CL	CL	CL	CL	CL
2.	Odour	--	APHA 2150 B	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Taste	--	APHA 2160 C	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	APHA 2130 B	1	<1	<1	<1	<1	<1
5.	pH	--	APHA 4500H ⁺ B	6.5-8.5	7.16	7.18	7.22	7.19	7.19
6.	Total Hardness (as CaCO ₃)	mg/l	APHA 2340 C	300	56	58	60	58.00	58.00
7.	Iron (as Fe)	mg/l	APHA 3500Fe ₂ B	0.3	0.024	0.028	0.032	0.03	0.03
8.	Chloride (as Cl)	mg/l	APHA 4500Cl ⁻ B	250	22.8	26	28.1	25.63	25.63
9.	Residual Free Chlorine	mg/l	APHA 4500Cl ⁻ B	0.2	ND	ND	ND	ND	ND
Desirable Characteristics									
10.	Total Dissolved Solids	mg/l	APHA 2540 C	500	192	182	188	187.33	187.33
11.	Calcium as Ca	mg/l	APHA 3500Ca ²⁺ B	75	22.8	26	28	25.60	25.60
12.	Magnesium as Mg	mg/l	APHA 3500Mg ²⁺ B	30	7.2	6.8	6.5	6.83	6.83
13.	Copper as Cu	mg/l	APHA 3111 B,C	0.05	BDL	BDL	BDL	BDL	BDL
14.	Manganese as Mn	mg/l	APHA 3500Mn ²⁺ B	0.1	BDL	BDL	BDL	BDL	BDL
15.	Sulphate as SO ₄	mg/l	APHA 4500 SO ₄ ²⁻ E	200	5.6	5.9	5.4	5.63	5.63
16.	Nitrate as NO ₃	mg/l	APHA 4500 NO ₃ ⁻ E	45	1.32	1.38	1.26	1.32	1.32
17.	Fluoride as F	mg/l	APHA 4500F ⁻ C	1.0	0.011	0.012	0.013	0.012	0.012
18.	Phenolic Compounds as C ₆ H ₅ OH	mg/l	APHA 5530 B,D	0.001	BDL	BDL	BDL	BDL	BDL
19.	Mercury as Hg	mg/l	APHA 3500 Hg	0.001	BDL	BDL	BDL	BDL	BDL
20.	Cadmium as Cd	mg/l	APHA 3111 B,C	0.003	BDL	BDL	BDL	BDL	BDL
21.	Selenium as Se	mg/l	APHA 3114 B	0.01	BDL	BDL	BDL	BDL	BDL
22.	Arsenic as As	mg/l	APHA 3114 B	0.01	BDL	BDL	BDL	BDL	BDL
23.	Cyanide as CN	mg/l	APHA 4500 CN ⁻ C,D	0.05	ND	ND	ND	ND	ND
24.	Lead as Pb	mg/l	APHA 3111 B,C	0.01	BDL	BDL	BDL	BDL	BDL
25.	Zinc as Zn	mg/l	APHA 3111 B,C	5	BDL	BDL	BDL	BDL	BDL
26.	Antionic Detergents as MBAS	mg/l	APHA 5540 C	0.2	ND	ND	ND	ND	ND
27.	Chromium as Cr ⁺⁶	mg/l	APHA 3500Cr ⁶⁺ B	--	BDL	BDL	BDL	BDL	BDL
28.	Mineral Oil	mg/l	APHA 5220 B	0.5	ND	ND	ND	ND	ND
29.	Alkalinity	mg/l	APHA 2320 B	200	37	35	38	36.67	36.67
30.	Aluminium as Al	mg/l	APHA 3500Al ³⁺ B	0.03	BDL	BDL	BDL	BDL	BDL
31.	Boron	mg/l	APHA 4500B ⁻ B	1	BDL	BDL	BDL	BDL	BDL
32.	Poly Aromatic Hydrocarbon as PAH	mg/l	APHA 6440 B	0.0001	BDL	BDL	BDL	BDL	BDL
33.	Pesticides	µg/l	APHA 6630 B,C	Absent	Absent	Absent	Absent	Absent	Absent

Note: CL: Colourless, AL: Agreeable, U/O: Unobjectionable, ND: Not Detected, BDL (Below Detection Limits) Values: Turbidity<2 NTU, Cu<0.05 mg/l, Mn<0.05 mg/l, Cr<0.05 mg/l, Pb<0.01 mg/l, Zn<0.05 mg/l, Ni<0.05 mg/l, Cd<0.01 mg/l, As<0.01 mg/l, Se<0.01 mg/l, Fe<0.05 mg/l, Co<0.01 mg/l, Ni<0.01 mg/l, Hg<0.001 mg/l, Cl<0.001 mg/l, SO₄<0.001 mg/l, NO₃<0.001 mg/l, F<0.001 mg/l, Cu<0.001 mg/l, Mn<0.001 mg/l, Cr<0.001 mg/l, Pb<0.001 mg/l, Zn<0.001 mg/l, Ni<0.001 mg/l, As<0.001 mg/l, Se<0.001 mg/l, Fe<0.001 mg/l, Co<0.001 mg/l, Hg<0.001 mg/l.



For Visiontek Consultancy Services Pvt. Ltd



GROUND WATER QUALITY ANALYSIS REPORT MARCH TO MAY 20

Ref.:

Date:

- 1. Name of Industry : M/s Lakshmipur Graphite Beneficiation Plant, Koraput
- 2. Sampling Location : GW-3: Open Well at Rajanapanasagarha
- 3. Sample Collected By : VCSPL Representative

Sl.No.	Parameter	Unit	Testing Methods	Standard as per IS:10500:2012	Analysis Results			
					MAR-20	APR-20	MAY-20	Averages
Essential Characteristics								
1.	Colour	Hazen	APHA 2120 B, C	5	CL	CL	CL	CL
2.	Odour	--	APHA 2150 B	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Taste	--	APHA 2160 C	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	APHA 2130 B	1	<1	<1	<1	<1
5.	pH	--	APHA 4500H ⁺ B	6.5-8.5	7.44	7.42	7.36	7.41
6.	Total Hardness (as CaCO ₃)	mg/l	APHA 2340 C	300	60	64	68	64.00
7.	Iron (as Fe)	mg/l	APHA 3500Fe ₂ B	0.3	0.046	0.042	0.052	0.05
8.	Chloride (as Cl)	mg/l	APHA 4500Cl ⁻ B	250	20.8	28	30.2	26.33
9.	Residual Free Chlorine	mg/l	APHA 4500Cl ₂ B	0.2	ND	ND	ND	ND
Desirable Characteristics								
10.	Total Dissolved Solids	mg/l	APHA 2540 C	500	124	128	138	130.00
11.	Calcium as Ca	mg/l	APHA 3500Ca B	75	26	30	31.2	29.07
12.	Magnesium as Mg	mg/l	APHA 3500Mg B	30	7.2	6.6	6.8	6.87
13.	Copper as Cu	mg/l	APHA 3111 B,C	0.05	BDL	BDL	BDL	BDL
14.	Manganese as Mn	mg/l	APHA 3500Mn B	0.1	BDL	BDL	BDL	BDL
15.	Sulphate as SO ₄ ²⁻	mg/l	APHA 4500 SO ₄ ²⁻ E	200	6.6	7.1	6.8	6.83
16.	Nitrate as NO ₃	mg/l	APHA 4500 NO ₃ ⁻ E	45	2.1	2.4	2.8	2.43
17.	Fluoride as F	mg/l	APHA 4500F ⁻ C	1.0	0.016	0.012	0.018	0.015
18.	Phenolic Compounds as C ₆ H ₅ OH	mg/l	APHA 5530 B,D	0.001	BDL	BDL	BDL	BDL
19.	Mercury as Hg	mg/l	APHA 3500 Hg	0.001	BDL	BDL	BDL	BDL
20.	Cadmium as Cd	mg/l	APHA 3111 B,C	0.003	BDL	BDL	BDL	BDL
21.	Selenium as Se	mg/l	APHA 3114 B	0.01	BDL	BDL	BDL	BDL
22.	Arsenic as As	mg/l	APHA 3114 B	0.01	BDL	BDL	BDL	BDL
23.	Cyanide as CN	mg/l	APHA 4500 CN ⁻ C,D	0.05	ND	ND	ND	ND
24.	Lead as Pb	mg/l	APHA 3111 B,C	0.01	BDL	BDL	BDL	BDL
25.	Zinc as Zn	mg/l	APHA 3111 B,C	5	BDL	BDL	BDL	BDL
26.	Anionic Detergents as MBAS	mg/l	APHA 3540 C	0.2	ND	ND	ND	ND
27.	Chromium as Cr ⁺⁶	mg/l	APHA 3500Cr ⁶⁺ B	--	BDL	BDL	BDL	BDL
28.	Mineral Oil	mg/l	APHA 5220 B	0.5	ND	ND	ND	ND
29.	Alkalinity	mg/l	APHA 2320 B	200	42	43	46	43.67
30.	Aluminium as Al	mg/l	APHA 3500Al B	0.03	BDL	BDL	BDL	BDL
31.	Boron	mg/l	APHA 4500B ₃ B	1	BDL	BDL	BDL	BDL
32.	Poly Aromatic Hydrocarbon as PAH	mg/l	APHA 6440 B	0.0001	BDL	BDL	BDL	BDL
33.	Pesticides	µg/l	APHA 6630 B,C	Absent	Absent	Absent	Absent	Absent

Note: CL: Colourless, AL: Agreeable, U/D: Unobjectionable, ND: Not Detected, BDL (Below Detection Limits) Values: Turbidity < 2 NTU, Cu < 0.05 mg/l, Ni < 0.05 mg/l, Mn < 0.05 mg/l, Fe < 0.05 mg/l, Cr⁶⁺ < 0.001 mg/l, Pb < 0.01 mg/l, Zn < 0.05 mg/l, Al < 0.001 mg/l, B < 0.01 mg/l, PAH < 0.0001 µg/l, Cd < 0.001 mg/l, Se < 0.001 mg/l, As < 0.001 mg/l, Hg < 0.001 mg/l, Cr⁶⁺ < 0.001 mg/l, Cr³⁺ < 0.001 mg/l, Ni < 0.001 mg/l, Mn < 0.001 mg/l, Fe < 0.001 mg/l, Cu < 0.001 mg/l, Zn < 0.001 mg/l, Al < 0.001 mg/l, B < 0.001 mg/l, PAH < 0.0001 µg/l.

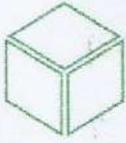


For Visiontek Consultancy Services Pvt. Ltd.

Annexure-4

SURFACE WATER QUALITY REPORT





Ref.:

SURFACE WATER QUALITY ANALYSIS REPORT MARCH TO MAY 2020

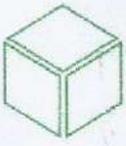
1. Name of Industry : M/s Lakshmipur Graphite Beneficiation Plant , Koraput
2. Sampling Location : SW-1: Godabandha Nallah Near Plant Site
5. Sample Collected By : VCSPL Representative

Sl. No.	Parameter	Testing Methods	Unit	Standards as per IS-2296:1992 Class - 'C'	Analysis Results			
					MAR-20	APR-20	MAY-20 Averages	
1.	pH Value	APHA 4500H ⁺ B	--	6.0-9.0	7.36	7.34	7.48	7.39
2.	Dissolved Oxygen (minimum)	APHA 2540 C	mg/l	4.0	6.42	5.46	6.8	6.23
3.	Total Dissolved Solids as TDS	APHA 2540 D	mg/l	1500	140.0	146.0	154.0	146.67
4.	Total Suspended Solids as TSS	APHA 2540 C	mg/l	--	7.2	7.1	7.5	7.27



For Visiontek Consultancy Services Pvt. Ltd.

Date:



Ref.:

Date:

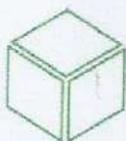
SURFACE WATER QUALITY ANALYSIS REPORT MARCH TO MAY-2020

1. Name of Industry : M/s Lakshampur Graphite Beneficiation Plant, Koraput
2. Sampling Location : SW-2: Godabandha Nallah Near Nalachuan
3. Sample Collected By : VCSPL Representative

Sl. No.	Parameter	Testing Methods	Unit	Standards as per IS-2296:1992 Class - 'C'	Analysis Results			
					MAR-20	APR-20	MAY-20 Averages	
1.	pH Value	APHA 4500H ⁺ B	--	6.0-9.0	7.56	7.52	7.48	7.5
2.	Dissolved Oxygen (minimum)	APHA 2540 C	mg/l	4.0	7.1	7.6	8.1	7.6
3.	Total Dissolved Solids as TDS	APHA 2540 D	mg/l	1500	162	170	174	168.7
4.	Total Suspended Solids as TSS	APHA 2540 C	mg/l	--	34	28	32	31.3



For Visiontek Consultancy Services Pvt. Ltd.



Ref.:

Date:

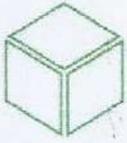
SURFACE WATER QUALITY ANALYSIS REPORT MARCH TO MAY 2020

1. Name of Industry : M/s Lakshmipur Graphite Beneficiation Plant, Koraput
2. Sampling Location : SW-3: Jhanjabati Nadi Near Rumbuli
3. Sample Collected By : VCSPL Representative

Sl. No.	Parameter	Testing Methods	Unit	Standards as per IS-2296:1992 Class 'C'	Analysis Results		
					MAR-20	APR-20	MAY-20 Averages
1.	pH Value	APHA 4500H+B	--	6.0-9.0	7.51	7.58	7.62
2.	Dissolved Oxygen (minimum)	APHA 2540 C	mg/l	4.0	6.2	7.1	6.8
3.	Total Dissolved Solids as TDS	APHA 2540 D	mg/l	1500	148	142	139
4.	Total Suspended Solids as TSS	APHA 2540 C	mg/l	--	8.2	9.1	7.8



For Visiontek Consultancy Services Pvt. Ltd.



Ref.:

SURFACE WATER QUALITY ANALYSIS REPORT MARCH TO MAY 2020

1. Name of Industry : M/s Lakshmipur Graphite Beneficiation Plant, Koraput
2. Sampling Location : SW-4; Jhanjabati Nadi Near Panebarhi
3. Sample Collected By : VCSPL Representative

Sl. No.	Parameter	Testing Methods	Unit	Standards as per IS-2296:1992 Class -'C'	Analysis Results			
					MAR-20	APR-20	MAY-20	
1.	pH Value	APHA 4500H ⁺ B	--	6.0-9.0	7.31	7.36	7.34	7.3
2.	Dissolved Oxygen (minimum)	APHA 2540 C	mg/l	4.0	5.8	5.6	6.1	5.8
3.	Total Dissolved Solids as TDS	APHA 2540 D	mg/l	1500	124	118	126	122.7
4.	Total Suspended Solids as TSS	APHA 2540 C	mg/l	--	5.0	5.1	4.9	5.0

Date:

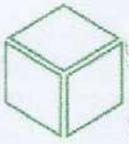


For Visiontek Consultancy Services Pvt. Ltd.

Annexure-5

SOIL QUALITY ANALYSIS REPORT





Ref.:

SOIL QUALITY ANALYSIS REPORT MARCH TO MAY 20

1. Name of Industry : M/s Lakshnipur Graphite Beneficiation Plant, Koraput
2. Date of Sampling : 16.05.2020
3. Date of Analysis : 17.05.2020 TO 24.05.2020
4. Sample Collected By : VCSPL Representative in presence of Client Representative

Date:

Sl. No.	Parameters	Analysis Results				
		S-1: Plant Site	S-2: Sapamba	S-3: Marabaigurha	S-4: Near Minapani RF	S-5: Rumbuli
1	Colour	Gray	Gray	Gray - Black	Gray	Gray - Black
2	Porosity /Water holding capacity (%)	13.8	16.2	21.2	21.8	28
3	Moisture content (%)	6.8	7.2	6.6	7.8	7.2
4	pH	6.12	6.18	6.21	6.26	6.44
5	Type of Soil	Acidic	Acidic	Acidic	Acidic	Acidic
6	Soil Texture	Clay	Clay	Clay Loamy	Clay	Clay
7	Bulk Density (gm/cc)	1.12	1.44	1.28	1.32	1.44
8	Infiltration Rate (Cm/hr)	7.08	7.12	7.34	7.26	7.24
9	Calcium as Ca (%)	0.42	0.56	0.56	0.62	0.58
10	Magnesium as Mg (%)	0.33	0.34	0.28	0.34	0.41
11	Organic Matter (%)	1.36	1.42	1.92	1.54	2.16
12	Nitrogen as N (%)	0.44	0.49	0.66	0.72	0.51
13	Phosphorus (%)	0.071	0.074	0.18	0.066	0.28
14	Potassium (%)	0.44	0.48	0.56	0.52	0.72
15	Chloride (%)	0.28	0.26	0.18	0.32	0.38
16	Sulphate (%)	0.12	0.18	0.52	0.51	0.62
17	Iron (%)	0.033	0.034	0.032	0.032	0.028

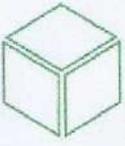


For Visiontek Consultancy Services Pvt. Ltd.

Annexure-6

NOISE MONITORING REPORT





Ref.:

Date:

NOISE MONITORING REPORT MARCH TO MAY 20

1. Name of Industry : M/s Lakshmipur Graphite Beneficiation Plant, Koraput

Location ID	Monitoring Station Location	Day time Equivalent (Noise Level in dB(A) leq)			Night time Equivalent (Noise Level in dB(A) leq)		
		MAR-20	APR-20	MAY-20	MAR-20	APR-20	MAY-20
N-1	Project Site	59.2	60.8	61.4	48.8	50.6	50.8
N-2	Lakshmipur	60.8	61.2	61.2	50.6	51.2	50.2
N-3	Katrakana	61.4	61.6	60.6	51.2	51.6	48.8
N-4	Phunjisil	61.2	62.8	60.8	51.4	48.8	49.6
N-5	Matalamba	62.2	60.8	58.8	52.2	50.6	49.2
N-6	Bandipar	60.8	61.2	61.8	52.6	50.2	48.8
N-7	Khalakana	61.8	62.2	61.2	51.8	51.2	48.6
N-8	Dara	62.2	62.4	60.6	50.8	50.1	49.1
Standard as per CPCB		75			70		

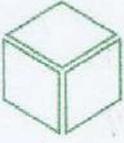


For Visiontek Consultancy Services Pvt. Ltd.

Annexure-7

SILICA ANALYSIS REPORT





Ref.:

Date:

SILICA ANALYSIS REPORT MARCH TO MAY 20

1. Name of Industry : M/s Lakshmipur Graphite Beneficiation Plant, Koraput
2. Sample Collected By : VCSPL Representative

Location Id	Date of Sampling	Unit	Analysis Result Silica as SiO ₂
AAQ1: Project Site	16.05.2020	%	0.006
AAQ2:Lakshmipur			0.008
AAQ3:Katrakana			0.011
AAQ4: Phunjisil			0.005



For Visiontek Consultancy Services Pvt. Ltd.



Visiontek Consultancy Services Pvt. Ltd *(An Enviro Engineering Consulting Cell)*

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