



ENVIRONMENTAL AUDIT STATEMENT

2021-22

For

GOVINDA UG MINE

Under

(JAMUNA KOTMA AREA)

South Eastern Coalfields Limited

(A Mini Ratna Company)

Year of establishment – 1987

Capacity of Mine- 511,872 Metric tonnes per annum (as per CTO)

Project Area - 468.82 ha (as per CTO)

**Central Mine Planning & Design Institute Limited
Regional Institute – V, CMPDI Complex, Seepat Road,
BILASPUR (C.G.)**

ENVIRONMENTAL AUDIT STATEMENT (2021-22)
GOVINDA UNDER GROUND COLLIERY

CHAPTER - I

TABLE-1.1

1.0	General Information	:	Govinda UG Colliery, (Meera Incline), Jamuna Kotma Area, P.O. Kotma Colliery, Distt- Anuppur (M.P.) 484336
a)	Extractable Reserves (as on 01.04.2022)	:	0.5173 MT
b)	Target output & grade of coal (2022-23)	:	0.080 MT and Grade: G-8
c)	Seams Worked	:	UK top and UK bottom, MK
d)	Thickness of Seam Worked (in metres.)	:	I-1.3 to 3.00 m II- 1.3 to 1.80 m III- 1.3 to 3.32 m
e)	Depth of Seams from the surface	:	(i) Minimum: UKT: 22 m, UKB: 27 m, MK: 60 m (ii) Maximum: UKT: 55 m, UKB: 60 m, MK: 105 m
f)	Av. Stripping ratio mining purpose	:	Not Applicable (Mine is Underground)
g)	No. of villages/ families	:	NIL
h)	(i) Mining area (in Ha.)	:	468.82 Ha
	(ii) Leasehold area other than mining purpose (in Ha.)	:	NIL
	(iii) Total Leasehold Area (in Ha.)	:	468.82 Ha

1.1	Brief Geology of Mine	:	Meera incline is a part of Govinda R.O. There are several faults in the area with ranging from 12 m to 15 m. It is situated 2.0 km away from Kotma Railway station. In this mine, there are 03 workable seams i.e. UK top, UK bottom and Middle Kotma seam.												
1.2	Mining Method Description	:	Bord and Pillar mining method.												
1.3	Present Status of the mine	:	Mine is in operation												
1.4	Production Figures														
			<table border="1"> <tr> <td>2017-18</td> <td>0.1302 MT (130158 Tonnes)</td> </tr> <tr> <td>2018-19</td> <td>0.1690 MT (169020 Tonnes)</td> </tr> <tr> <td>2019-20</td> <td>0.1395 MT (139515 Tonnes)</td> </tr> <tr> <td>2020-21</td> <td>0.0671 MT (67111 Tonnes)</td> </tr> <tr> <td>2021-22</td> <td>0.0726 MT (72625 Tonnes)</td> </tr> <tr> <td>2022-23 (Target)</td> <td>0.0800 MT (80000 Tonnes)</td> </tr> </table>	2017-18	0.1302 MT (130158 Tonnes)	2018-19	0.1690 MT (169020 Tonnes)	2019-20	0.1395 MT (139515 Tonnes)	2020-21	0.0671 MT (67111 Tonnes)	2021-22	0.0726 MT (72625 Tonnes)	2022-23 (Target)	0.0800 MT (80000 Tonnes)
2017-18	0.1302 MT (130158 Tonnes)														
2018-19	0.1690 MT (169020 Tonnes)														
2019-20	0.1395 MT (139515 Tonnes)														
2020-21	0.0671 MT (67111 Tonnes)														
2021-22	0.0726 MT (72625 Tonnes)														
2022-23 (Target)	0.0800 MT (80000 Tonnes)														
2.0	No. of Inclines (Running)	:	02 (Two)												
3.0	Shafts	:	01 (One)												
4.0	No. of quarries	:	Not Applicable (Mine is Underground)												
5.0	Overburden	:	Not Applicable (Mine is Underground)												
6.0	Main Consumers	:	Power Plants												
7.0	Mode of dispatch		By Road to Govinda Siding.												

CHAPTER-II

FORM-V (See rule 14)

Environmental Statement for the Financial Year ending 31st March 2022

PART-A

- (i) **Name and address of the mine** : Govinda UG Colliery (Meera Incline),
Jamuna Kotma Area, P.O. Kotma
Colliery, Distt- Anuppur (M.P.) 484336
- (ii) **Industry category Primary (SIC Code) or Secondary (SIC Code)** : Primary
- (iii) **Production capacity units** : 5,11,872 Metric Tonnes per Annum
(as per CTO)
- (iv) **Year of establishment** : 01.12.1987, Production from
01.07.1990
- (v) **Date of the last environmental Statement Submitted** : September, 2021

PART-B
Water and Raw Materials Consumption

(i) Water Consumption (KLD)

Industrial consumption: 100 KLD

Domestic consumption: 1500 KLD

Treated water provided to nearby villagers: 100 KLD

Name of Products	Process water consumption per product output	
	During the previous financial year 2020-21	During the current financial year 2021-22
Coal	No processing of Coal	No processing of Coal

(ii) Raw materials consumption

*Name of raw materials	Name of products	Consumption of raw material per unit of output	
		During the previous financial year 2020-21	During the current financial year 2021-22
Explosive	Coal	38,480.59 kg	25,517.48 Kg
P.O.L	Coal	13,852 litres	5,312 litres

*Industry may use codes if disclosing details of raw materials would violate contractual obligations, otherwise all industries have to name the raw materials used.

PART-C
POLLUTANT DISCHARGED TO ENVIRONMENT/ UNIT OF OUTPUT
(Parameters as specified in the consent issued)

Pollutants (Including mine & colony discharge of water)	Quantity of pollutants discharged (mass/day)	Concentrations of pollutants in discharges (mass/ volume)	Percentage of variation from prescribed standards with reasons
(a) Air	Within the Permissible limit	Environmental Monitoring report enclosed.	Environmental Monitoring report enclosed.
(b) Water			
(i) Mine water pumped out	1700 KLD		
(ii) Industrial water discharged	NIL		
(iii) Colony water discharged	Permissible Limit		
(c) Noise	Within the Permissible limit		

**PART-D
HAZARDOUS WASTES**

(As specified under Hazardous Wastes/ Management Handling Rule, 1989)

Hazardous Wastes	Total quantity (Kg)	
	During the previous financial year 2020-21	During the current financial year 2021-22
From Process	Burnt Oil (Cat 5.1): 210 litres	Burnt Oil (Cat 5.1): 50 litres
From Pollution control facilities	NIL	

Neither liquid nor solid hazardous wastes are generated during underground coal mining.

**PART-E
SOLID WASTES**

Removal of overburden	Total quantity	
	During the previous financial year 2020-21	During the current financial year 2021-22
Total O.B.	Not Applicable (Mine is underground)	
Total O.B. For back filling		
Total O.B. disposed		

PART-F

Please specify the characterization (in terms of composition and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

Description	Qty. MT/ Year (21-22)	Collection Method
Steel Scrap	05 Nos. MS drum	Collected at Regional Stores, Jamuna Kotma Area and is auctioned.
Other mixed scrap	NIL	Collected at Regional Stores, Jamuna Kotma Area and is auctioned.
Copper Scrap	NIL	---
Aluminum Scrap	NIL	---
Used Oil	50 litres	Collected onsite and disposed-off by selling to MPPCB authorized recycler as per HWM Rule 2016.

PART-G

Impact of the pollution abatement measure taken on conservation of natural resources and on the cost of production.

- The treated mine water given to the settling ponds in the nearby villages act as underground water recharge and avails water to the villagers for agriculture, horticulture and domestic purposes.
- Roof top rain water harvesting system is installed in office buildings which act as ground water recharge.
- The plantation helps in restoration of the biodiversity, improving the fertility of the soil in longer run and act as a food sources for the cattle.

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- The measures taken to curb pollution would be in compliance of the conditions laid by the monitoring agencies like MPPCB. Compliance of statutory conditions ensures the smooth running of the project. Hence, it helps in avoiding the hindrance in coal production.
 - It provides the pollution free atmosphere at working places thereby reducing the occupational health hazards and quantum of coal production increased. Therefore, cost per tonne of coal is reduced.
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PART-H

Additional measures/ investment proposals for environmental protection including abatement of pollution, prevention of pollution.

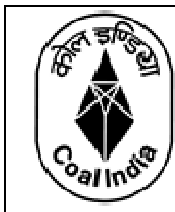
- Regular sprinkling on the coal transportation route through fixed and mobile sprinklers.
 - The mine water pumped out undergoes two stage settling process. First at the underground sump and second at the surface settling tank/ pond. The treated water at the settling ponds are reused by the villagers for agriculture, horticulture and domestic uses.
 - Road sweeping machine is deployed in Jamuna Kotma Area for cleaning of the dust on the coal transportation road and colony roads.
 - Sprinklers have been provided in railway siding premises and coal transportation route.
 - Water spraying is done by mobile water tanker in the coal transportation road
 - Coal transportation road has been black topped which reduces the air pollution.
 - CHP conveyer belts are covered with GI sheets.
 - CHP operation is accompanied with dust suppression system.
-

PART-I

Any other particulars for improving the quality of the environment.

For developing awareness among the employees and citizens, every year World Environment Week is celebrated with wide publicity and propaganda.

ENVIRONMENTAL MONITORING REPORT

**CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED**

Environment Laboratory, Regional Institute-V,
Hasdeo, PO North Jhagrakhand, Korea (C.G.)- 497446,
email: rdri5.cmpdi@coalindia.in
website: www.cmpdi.co.in

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AIR QUALITY REPORT

Month	January	Area	Jamuna & Kotma	Report No	01
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	09.02.2022
Name of the Project	Govinda U.G.	Sample Reference No.	CMPDI/ HSD/J&K/JAN

Parameter		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	Remarks			
Limit (in µg/m ³)-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)	A-O	600	300	60	120		120		
		A-N	500	250	60	120		120		
	Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), April 02, 1996)	B	200	100	60	80		80		
Method of analysis		IS-5182 PART 4	IS-5182 PART 23	CPCB Vol-I	IS-5182 PART 2	IS-5182 PART 6				
Station Name	Stn Code	Stn. cat.	Date of sampling	Date of analysis	SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	
Govinda Incline	05	A-O	05.01.22	08.01.22	341	122	-	9	16	
			19.01.22	22.01.22	333	127	-	10	17	
Meera Incline	06	A-O	05.01.22	08.01.22	349	115	-	12	20	
			19.01.22	22.01.22	342	109	-	15	23	
Govinda Filter Plant	07	B	05.01.22	08.01.22	143	60	-	9	16	
			19.01.22	22.01.22	137	64	-	11	18	
Govinda Staff colony	08	B	05.01.22	08.01.22	139	66	-	8	15	
			19.01.22	22.01.22	145	71	-	9	16	

Tested by

Checked by

Officer In-charge

Note: 1) The results above relate to the samples tested.

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website: www.cmpdi.co.in

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NOISE QUALITY REPORT

Month	January	Area	Jamuna & Kotma Area	Report No	01
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	09.02.2022
Name of the Project	Govinda U.G.	Sample Reference No.	CMPDI/ HSD/J&K/JAN

Parameter			The Noise Pollution (R & C) rules, 2000		Remarks
			Day Time	Night Time	
Limit (in dB(A) Leq	Industrial area	A	75	70	
	Commercial area	B	65	55	
	Residential Area	C	55	45	
	Silence Zone	D	50	40	
Method of analysis	CPCB Protocol For Ambient Level Noise Monitoring				
Station Name	Station Code	Station category	Date of measurement	Value in dB(A)	Value in dB(A)
GOVINDA INCLINE	05	A	07.01.2022	68.5	59.4
			22.01.2022	70.3	57.6
MEERA INCLINE	06	A	07.01.2022	71.2	60.5
			22.01.2022	69.4	58.3
GOVINDA FILTER PLANT	07	C	07.01.2022	48.2	39.2
			22.01.2022	50.3	41.6
GOVINDA STAFF COLONY	08	C	07.01.2022	51.5	38.3
			22.01.2022	49.4	40.5

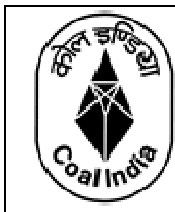
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EFFLUENT WATER QUALITY REPORT

Month	January	Area	Jamuna & Kotma	Report No	01
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	09.02.2022
Name of the Project	GOVINDA U.G.	Sample reference No.	CMPDI/ HSD/J&K/JAN

Parameter	pH Value, LDL	Total suspended Solids, mg/l, max	C.O.D, mg/l, max	Oil & Grease, mg/l, max	B.O.D. (3 days 27°C)mg/l, max			
Lower Detection Limit	0.01	25.0	4.0	2.0	2.0			
General Standards for Discharge of Environmental Pollution (Part A: Effluent) as per Schedule VI, Environment (Protection) Rules	5.5 to 9.0	100.0	250.0	10.0	30.0			
Station name	St. Code	Date of Sampling	Date of Analysis					
1- Mine Discharge of Govinda incline	04	05.01.22	05.01.22 to 14.01.22	6.82	34	20	<2.0	-
		19.01.22	19.01.22 to 27.01.22	6.84	37	24	<2.0	-
2- Mine Discharge of Meera incline	05	05.01.22	05.01.22 to 14.01.22	7.57	42	24	<2.0	-
		19.01.22	19.01.22 to 27.01.22	7.59	40	28	<2.0	-
3- Mine Discharge of Meera incline(at municipal pond)	06	05.01.22	05.01.22 to 14.01.22	7.66	43	28	<2.0	-
		19.01.22	19.01.22 to 27.01.22	7.68	41	24	<2.0	-

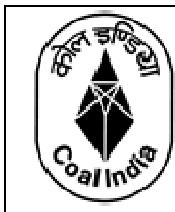
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AIR QUALITY REPORT

Month	February	Area	Jamuna & Kotma	Report No	02
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	11.03.2022
Name of the Project	Govinda U.G.	Sample Reference No.	CMPDI/ HSD/J&K/FEB

Parameter		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	Remarks			
Limit (in µg/m ³)-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)	A-O	600	300	60	120		120		
		A-N	500	250	60	120		120		
	Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), April 02, 1996)	B	200	100	60	80		80		
Method of analysis		IS-5182 PART 4	IS-5182 PART 23	CPCB Vol-I	IS-5182 PART 2	IS-5182 PART 6				
StationName	Stn Code	Stn. cat.	Date of sampling	Date of analysis	SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	
Govinda Incline	05	A-O	04.02.22	07.02.22	325	123	-	14	22	
			23.02.22	28.02.22	336	129	-	16	24	
Meera Incline	06	A-O	04.02.22	07.02.22	339	111	-	13	21	
			23.02.22	28.02.22	347	117	-	14	22	
Govinda Filter Plant	07	B	04.02.22	07.02.22	134	67	-	8	15	
			23.02.22	28.02.22	139	71	-	10	17	
Govinda Staff colony	08	B	04.02.22	07.02.22	140	68	-	9	16	
			23.02.22	28.02.22	146	72	-	11	18	

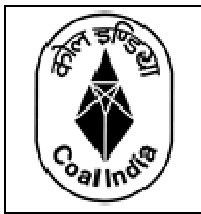
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NOISE QUALITY REPORT

Month	February	Area	Jamuna & Kotma Area	Report No	02
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	11.03.2022
Name of the Project	Govinda U.G.	Sample Reference No.	CMPDI/ HSD/J&K/FEB

Parameter			The Noise Pollution (R & C) rules, 2000		Remarks
			Day Time	Night Time	
Limit (in dB(A) Leq	Industrial area	A	75	70	
	Commercial area	B	65	55	
	Residential Area	C	55	45	
	Silence Zone	D	50	40	
Method of analysis	CPCB Protocol For Ambient Level Noise Monitoring				
Station Name	Station Code	Station category	Date of measurement	Value in dB(A)	Value in dB(A)
GOVINDA INCLINE	05	A	05.02.22	69.4	60.2
			19.02.22	71.2	58.5
MEERA INCLINE	06	A	05.02.22	68.8	57.4
			19.02.22	70.3	59.2
GOVINDA FILTER PLANT	07	C	05.02.22	49.7	37.4
			19.02.22	51.2	39.7
GOVINDA STAFF COLONY	08	C	05.02.22	48.6	36.8
			19.02.22	50.5	38.6

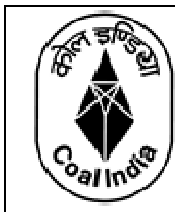
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EFFLUENT WATER QUALITY REPORT

Month	February	Area	Jamuna & Kotma	Report No	02
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	11.03.2022
Name of the Project	GOVINDA U.G.	Sample reference No.	CMPDI/ HSD/J&K/FEB

Parameter	pH Value, LDL	Total suspended Solids, mg/l, max	C.O.D, mg/l, max	Oil & Grease, mg/l, max	B.O.D. (3 days 27°C)mg/l, max			
Lower Detection Limit	0.02	25.0	4.0	2.0	2.0			
General Standards for Discharge of Environmental Pollution (Part A: Effluent) as per Schedule VI, Environment (Protection) Rules	5.5 to 9.0	100.0	250.0	10.0	30.0			
Station name	St. Code	Date of Sampling	Date of Analysis					
1- Mine Discharge of Govinda incline	04	04.02.22	04.02.22 to 13.02.22	6.79	36	16	<2.0	-
		23.02.22	23.02.22 to 02.03.22	6.81	38	20	<2.0	-
2- Mine Discharge of Meera incline	05	04.02.22	04.02.22 to 13.02.22	7.61	41	28	<2.0	-
		23.02.22	23.02.22 to 02.03.22	7.58	43	24	<2.0	-
3- Mine Discharge of Meera incline(at municipal pond)	06	04.02.22	04.02.22 to 13.02.22	7.67	40	24	<2.0	-
		23.02.22	23.02.22 to 02.03.22	7.69	42	28	<2.0	-

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AIR QUALITY REPORT

Month	March	Area	Jamuna & Kotma	Report No	03
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	02.04.2022
Name of the Project	Govinda U.G.	Sample Reference No.	CMPDI/ HSD/J&K/MAR

Parameter					SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	Remarks
Limit (in µg/m ³)-24 hrs	Industrial Zone -(G.S.R. 742(E), dated 25.9.2000)		A-O	600	300	60	120	120		
			A-N	500	250	60	120	120		
	Residential Zone-(G.S.R. 826(E), dated 16.11.2009 and GSR 176 (E), April 02, 1996)		B	200	100	60	80	80		
Method of analysis					IS-5182 PART 4	IS-5182 PART 23	CPCB Vol-I	IS-5182 PART 2	IS-5182 PART 6	
StationName	Stn Code	Stn. cat.	Date of sampling	Date of analysis	SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	
Govinda Incline	05	A-O	02.03.22	05.03.22	339	126	-	13	23	
			24.03.22	30.03.22	347	132	-	15	25	
Meera Incline	06	A-O	02.03.22	05.03.22	343	113	-	14	22	
			24.03.22	30.03.22	351	118	-	16	24	
Govinda Filter Plant	07	B	02.03.22	05.03.22	142	68	-	9	16	
			24.03.22	30.03.22	149	75	-	11	18	
Govinda Staff colony	08	B	02.03.22	05.03.22	145	71	-	10	17	
			24.03.22	30.03.22	153	76	-	12	19	

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NOISE QUALITY REPORT

Month	March	Area	Jamuna & Kotma Area	Report No	03
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	02.04.2022
Name of the Project	Govinda U.G.	Sample Reference No.	CMPDI/ HSD/J&K/MAR

Parameter			The Noise Pollution (R & C) rules, 2000		Remarks
			Day Time	Night Time	
Limit (in dB(A) Leq	Industrial area	A	75	70	
	Commercial area	B	65	55	
	Residential Area	C	55	45	
	Silence Zone	D	50	40	
Method of analysis	CPCB Protocol For Ambient Level Noise Monitoring				
Station Name	Station Code	Station category	Date of measurement	Value in dB(A)	Value in dB(A)
GOVINDA INCLINE	05	A	08.03.22	70.2	59.4
			26.03.22	72.3	61.6
MEERA INCLINE	06	A	08.03.22	71.5	56.5
			26.03.22	69.2	58.4
GOVINDA FILTER PLANT	07	C	08.03.22	48.6	36.5
			26.03.22	50.4	38.6
GOVINDA STAFF COLONY	08	C	08.03.22	47.5	37.7
			26.03.22	49.2	39.5

Prepared by

Checked by

Officer In-charge

Note: 1) The results above relate to the samples tested.

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**CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED**

Environment Laboratory, Regional Institute-V,
Hasdeo, PO North Jhagrakhand, Korea (C.G.)- 497446,
email: rdri5.cmpdi@coalindia.in
website: www.cmpdi.co.in

cmpdi
A Mini Ratna Company

EFFLUENT WATER QUALITY REPORT

Month	March	Area	Jamuna & Kotma	Report No	03
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Name of the Customer	South Eastern Coalfields Ltd, Bilaspur	Date of Issue	02.04.2022
Name of the Project	GOVINDA U.G.	Sample reference No.	CMPDI/ HSD/J&K/MAR

Parameter	pH Value, LDL	Total suspended Solids, mg/l, max	C.O.D, mg/l, max	Oil & Grease, mg/l, max	B.O.D. (3 days 27°C)mg/l, max			
Lower Detection Limit	0.02	25.0	4.0	2.0	2.0			
General Standards for Discharge of Environmental Pollution (Part A: Effluent) as per Schedule VI, Environment (Protection) Rules	5.5 to 9.0	100.0	250.0	10.0	30.0			
Station name	St. Code	Date of Sampling	Date of Analysis					
1- Mine Discharge of Govinda incline	04	02.03.22	02.03.22 to 06.03.22	6.77	39	20	<2.0	-
		24.03.22	24.03.22 to 30.03.22	6.80	37	16	<2.0	-
2- Mine Discharge of Meera incline	05	02.03.22	02.03.22 to 06.03.22	7.62	44	24	<2.0	-
		24.03.22	24.03.22 to 30.03.22	7.60	42	28	<2.0	-
3- Mine Discharge of Meera incline(at municipal pond)	06	02.03.22	02.03.22 to 06.03.22	7.65	45	28	<2.0	-
		24.03.22	24.03.22 to 30.03.22	7.67	47	24	<2.0	-

Tested by

Checked by

Officer In-charge

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Month	January	2022	Area	Jamuna and Kotma	Report No.	JN22JK
Customer	South Eastern Coalfields Ltd (SECL), Bilaspur			Date of Issue	15-02-22 17:01	
Project	Govinada UG		Sample Ref. No.	CMPDI/ENV/HSD/2022/2, Date:- 02/01/2022		
Sampling Stations	iv	Output of Govinda filter plant			Date of Sampling	2-Jan-2022
	v	Output of Kotma filter plant			Date of Sampling	2-Jan-2022

Sl. No.	Parameter	Method of Analysis	Date of Analysis		2-Jan-2022		to	5-Feb-22	Uncertainty of Measurement (at 95% Confidence Level & K= 1.96)
			Observed Values		IS 10500: 2012				
			iv	v	Acceptable Limit (Max)*	Permissible Limit in the Absence of Alternate Source (Max)			
1	Colour, Hazen LDL: 1.0 Hazen	APHA, 23rd Edition,2017, 2120. C. Spectrometric single wavelength method	10	19	5	15		±1.05 Hazen at 49.86 Hazen	
2	Odour	IS 3025 (Part 5):1983, Physical (Qualitative)	Agreeable	Agreeable	Agreeable	Agreeable		None	
3	Phenolic compounds, mg/l LDL: 0.001 mg/l	APHA, 23rd Edition,2017, 5530. C. Chloroform Extraction Method	BDL	BDL	0.001	0.002		±0.0204 mg/l at 0.100 mg/l	
4	Turbidity, NTU LDL: 1.0 NTU	IS 3025 (Part 10):1984, R : 2006, Nephelometric Method	3	12	1	5		±0.855 NTU at 41.58 NTU	
5	pH LDL: 4.00	IS 3025 (Part 11):1983, R : 2012, Electrometric Method	6.82	7.08	6.5-8.5	No relaxation		±0.1272 at 7.01	
6	Alkalinity, mg/l as CaCO ₃ LDL: 5.0 mg/l	IS 3025(Part 23):1986,R 2003 Titration Method	125	45	200	600		±0.19696 mg/l at 10.0 mg/l	
7	Total Hardness, mg/l as CaCO ₃ LDL: 4.0 mg/l	IS 3025 (Part 21):2009, EDTA Method	142	99	200	600		±11.545 mg/l at 612.8 mg/l	
8	Iron, mg/l LDL: 0.05 mg/l	IS 3025 (Part 53) :2003, R:2009 AAS-Flame Method	BDL	BDL	0.3	No relaxation		±0.0782 mg/l at 7.95 mg/l	
9	Chlorides, mg/l LDL: 5.0 mg/l	IS 3025(Part 32):1988 , R : 2007, Argentometric Method	52.0	15.0	250	1000		±6.551 mg/l at 253.5 mg/l	
10	Residual Free Chlorine, mg/l LDL: 0.1 mg/l	APHA, 23rd Edition,2017, 4500G, DPD Colorimetric Method	BDL	BDL	0.2	1		±0.0082 mg/l at 0.1 mg/l	
11	Total Dissolved Solids, mg/l LDL: 30.0 mg/l	IS 3025 (Part 16):1984 R : 2006, Gravimetric Method	305	298	500	2000		±4.473 mg/l at 592.0 mg/l	
12	Calcium, mg/l LDL: 5.0 mg/l	IS 3025 (Part 40) : 1991, R : 2009, EDTA Method	38.4	25.6	75	200		±2.512 mg/l at 99.8 mg/l	
13	Copper, mg/l LDL: 0.03 mg/l	IS 3025 (Part 42) : 1992 R : 2009, AAS-Flame Method	BDL	BDL	0.05	1.5		±0.131 mg/l at 4.90 mg/l	
14	Manganese, mg/l LDL: 0.05 mg/l	IS 3025 (Part 59) : 2006, AAS-Flame Method	0.11	0.09	0.1	0.3		±0.026 mg/l at 2.44 mg/l	
15	Sulphate, mg/l LDL: 2.0 mg/l	APHA, 23rd Edition,2017, 4500- SO42- E Turbidimetric Method	34	38	200	400		±0.640 mg/l at 19.88 mg/l	
16	Nitrate, mg/l LDL: 0.5 mg/l	APHA, 23rd Edition,2017, 4500, B UV-Spectrophotometric Method	9.26	3.56	45	No relaxation		±0.528 mg/l at 20.41 mg/l	
17	Fluoride, mg/l LDL: 0.1 mg/l	APHA, 23rd Edition,2017, 4500, F- D SPADNS Method	0.17	0.38	1	1.5		±0.014 mg/l at 0.98 mg/l	
18	Selenium, mg/l LDL: 0.001 mg/l	IS 3025 (Part 56):2003 AAS- VGA Method	BDL	BDL	0.01	No relaxation		±0.000938 mg/l at 0.001 mg/l	
19	Arsenic, mg/l LDL: 0.002 mg/l	IS 3025 (Part 37):1988,R 2003, AAS- VGA Method	BDL	BDL	0.01	0.05		±0.081 mg/l at 0.018 mg/l	
20	Lead, mg/l LDL: 0.005 mg/l	APHA, 23rd Edition,2017, 3113B, AAS-GTA Method	BDL	BDL	0.01	No relaxation		±0.000266 mg/l at 0.005 mg/l	
21	Zinc, mg/l LDL: 0.01 mg/l	IS 3025 (Part 49) : 1994, R : 2009, AAS-Flame Method	0.09	BDL	5	15		±0.0013 mg/l at 0.01 mg/l	
22	Total Chromium, mg/l LDL: 0.05 mg/l	IS 3025 (Part 52) : 2003, AAS-Flame Method	BDL	BDL	0.05	No relaxation		±0.004 mg/l at 0.05 mg/l	
23	Total Coliform, MPN/100 ml	APHA, 22nd Edition, 9221 Multiple Tube Fermentation Tech.	NIL	NIL	Nil	No relaxation		---	
24	Boron, mg/l LDL: 0.5 mg/l	APHA, 23rd Edition,2017, 4500-B, Carmine Method	BDL	BDL	0.5	1		±0.310 mg/l at 5.16 mg/l	

*Except Sl. No. 10 for which Acceptable Limit is Min

LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit

R.K Thakur
Junior Scientific Asst

M. Reagan Singh
Technical Manager

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Month	January	2022	Area	Jamuna and Kotma	Report No.	JN22JK
Customer	South Eastern Coalfields Ltd (SECL), Bilaspur			Date of Issue	15-02-22 17:01	
Project	Govinada UG		Sample Ref. No.	CMPDI/ENV/HSD/2022/2, Date:- 02/01/2022		
Sampling Stations	vi	Output of Kotma Guest House			Date of Sampling	2-Jan-2022

Sl. No.	Parameter	Method of Analysis	Date of Analysis		2-Jan-2022		Uncertainty of Measurement (at 95% Confidence Level & K= 1.96)
			Observed Values	vi	Acceptable Limit (Max)*	Permissible Limit in the Absence of Alternate Source (Max)	
1	Colour, Hazen LDL: 1.0 Hazen	APHA, 23rd Edition,2017, 2120. C. Spectrometric single wavelength method	3		5	15	±1.05 Hazen at 49.86 Hazen
2	Odour	IS 3025 (Part 5):1983, Physical (Qualitative)	Agreeable		Agreeable	Agreeable	None
3	Phenolic compounds, mg/l LDL: 0.001 mg/l	APHA, 23rd Edition,2017, 5530. C. Chloroform Extraction Method	BDL		0.001	0.002	±0.0204 mg/l at 0.100 mg/l
4	Turbidity, NTU LDL: 1.0 NTU	IS 3025 (Part 10):1984, R : 2006, Nephelometric Method	10		1	5	±0.855 NTU at 41.58 NTU
5	pH LDL: 4.00	IS 3025 (Part 11):1983, R : 2012, Electrometric Method	7.24		6.5-8.5	No relaxation	±0.1272 at 7.01
6	Alkalinity, mg/l as CaCO ₃ LDL: 5.0 mg/l	IS 3025(Part 23):1986,R 2003 Titration Method	55		200	600	±0.19696 mg/l at 10.0 mg/l
7	Total Hardness, mg/l as CaCO ₃ LDL: 4.0 mg/l	IS 3025 (Part 21):2009, EDTA Method	131		200	600	±11.545 mg/l at 612.8 mg/l
8	Iron, mg/l LDL: 0.05 mg/l	IS 3025 (Part 53) :2003, R:2009 AAS-Flame Method	BDL		0.3	No relaxation	±0.0782 mg/l at 7.95 mg/l
9	Chlorides, mg/l LDL: 5.0 mg/l	IS 3025(Part 32):1988 , R : 2007, Argentometric Method	14.0		250	1000	±6.551 mg/l at 253.5 mg/l
10	Residual Free Chlorine, mg/l LDL: 0.1 mg/l	APHA, 23rd Edition,2017, 4500G, DPD Colorimetric Method	BDL		0.2	1	±0.0082 mg/l at 0.1 mg/l
11	Total Dissolved Solids, mg/l LDL: 30.0 mg/l	IS 3025 (Part 16):1984 R : 2006, Gravimetric Method	302		500	2000	±4.473 mg/l at 592.0 mg/l
12	Calcium, mg/l LDL: 5.0 mg/l	IS 3025 (Part 40): 1991, R : 2009, EDTA Method	24.0		75	200	±2.512 mg/l at 99.8 mg/l
13	Copper, mg/l LDL: 0.03 mg/l	IS 3025 (Part 42) : 1992 R : 2009, AAS-Flame Method	BDL		0.05	1.5	±0.131 mg/l at 4.90 mg/l
14	Manganese, mg/l LDL: 0.05 mg/l	IS 3025 (Part 59) : 2006, AAS-Flame Method	BDL		0.1	0.3	±0.026 mg/l at 2.44 mg/l
15	Sulphate, mg/l LDL: 2.0 mg/l	APHA, 23rd Edition,2017, 4500- SO42- E Turbidimetric Method	34		200	400	±0.640 mg/l at 19.88 mg/l
16	Nitrate, mg/l LDL: 0.5 mg/l	APHA, 23rd Edition,2017, 4500, B UV-Spectrophotometric Method	2.89		45	No relaxation	±0.528 mg/l at 20.41 mg/l
17	Fluoride, mg/l LDL: 0.1 mg/l	APHA, 23rd Edition,2017, 4500, F- D SPADNS Method	0.41		1	1.5	±0.014 mg/l at 0.98 mg/l
18	Selenium, mg/l LDL: 0.001 mg/l	IS 3025 (Part 56):2003 AAS- VGA Method	BDL		0.01	No relaxation	±0.000938 mg/l at 0.001 mg/l
19	Arsenic, mg/l LDL: 0.002 mg/l	IS 3025 (Part 37):1988,R 2003, AAS- VGA Method	BDL		0.01	0.05	±.0081 mg/l at 0.018 mg/l
20	Lead, mg/l LDL: 0.005 mg/l	APHA, 23rd Edition,2017, 3113B, AAS-GTA Method	BDL		0.01	No relaxation	±0.000266 mg/l at 0.005 mg/l
21	Zinc, mg/l LDL: 0.01 mg/l	IS 3025 (Part 49) : 1994, R : 2009, AAS-Flame Method	0.19		5	15	±0.0013 mg/l at 0.01 mg/l
22	Total Chromium, mg/l LDL: 0.05 mg/l	IS 3025 (Part 52) : 2003, AAS-Flame Method	BDL		0.05	No relaxation	±0.004 mg/l at 0.05 mg/l
23	Total Coliform, MPN/100 ml	APHA, 22nd Edition, 9221 Multiple Tube Fermentation Tech.	NIL		Nil	No relaxation	---
24	Boron, mg/l LDL: 0.5 mg/l	APHA, 23rd Edition,2017, 4500-B, Carmine Method	BDL		0.5	1	±0.310 mg/l at 5.16 mg/l

*Except Sl. No. 10 for which Acceptable Limit is Min

LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit

R.K Thakur

Junior Scientific Asst

M. Reagan Singh

Technical Manager

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Month	February	2022	Area	Jamuna and Kotma	Report No.	FB22JK
Customer	South Eastern Coalfields Ltd (SECL), Bilaspur			Date of Issue	14-03-22 10:33	
Project	Govinada UG		Sample Ref. No.	CMPDI/ENV/HSD/2022/91, Date:- 14/02/2022		
Sampling Stations	iv	Output of Govinda filter plant			Date of Sampling	14-Feb-2022
	v	Output of Kotma filter plant			Date of Sampling	14-Feb-2022

Sl. No.	Parameter	Method of Analysis	Date of Analysis		14-Feb-2022		to	7-Mar-22	Uncertainty of Measurement (at 95% Confidence Level & K= 1.96)
			Observed Values		IS 10500: 2012				
			iv	v	Acceptable Limit (Max)*	Permissible Limit in the Absence of Alternate Source (Max)			
1	Colour, Hazen LDL: 1.0 Hazen	APHA, 23rd Edition,2017, 2120. C. Spectrometric single wavelength method	16	16	5	15		±1.05 Hazen at 49.86 Hazen	
2	Odour	IS 3025 (Part 5):1983, Physical (Qualitative)	Agreeable	Agreeable	Agreeable	Agreeable		None	
3	Phenolic compounds, mg/l LDL: 0.001 mg/l	APHA, 23rd Edition,2017, 5530. C. Chloroform Extraction Method	BDL	BDL	0.001	0.002		±0.0204 mg/l at 0.100 mg/l	
4	Turbidity, NTU LDL: 1.0 NTU	IS 3025 (Part 10):1984, R : 2006, Nephelometric Method	1	2	1	5		±0.855 NTU at 41.58 NTU	
5	pH LDL: 4.00	IS 3025 (Part 11):1983, R : 2012, Electrometric Method	6.85	7.12	6.5-8.5	No relaxation		±0.1272 at 7.01	
6	Alkalinity, mg/l as CaCO ₃ LDL: 5.0 mg/l	IS 3025(Part 23):1986,R 2003 Titration Method	101	81	200	600		±0.19696 mg/l at 10.0 mg/l	
7	Total Hardness, mg/l as CaCO ₃ LDL: 4.0 mg/l	IS 3025 (Part 21):2009, EDTA Method	106	102	200	600		±11.545 mg/l at 612.8 mg/l	
8	Iron, mg/l LDL: 0.05 mg/l	IS 3025 (Part 53) :2003, R:2009 AAS-Flame Method	0.18	BDL	0.3	No relaxation		±0.0782 mg/l at 7.95 mg/l	
9	Chlorides, mg/l LDL: 5.0 mg/l	IS 3025(Part 32):1988 , R : 2007, Argentometric Method	22.6	21.6	250	1000		±6.551 mg/l at 253.5 mg/l	
10	Residual Free Chlorine, mg/l LDL: 0.1 mg/l	APHA, 23rd Edition,2017, 4500G, DPD Colorimetric Method	BDL	BDL	0.2	1		±0.0082 mg/l at 0.1 mg/l	
11	Total Dissolved Solids, mg/l LDL: 30.0 mg/l	IS 3025 (Part 16):1984 R : 2006, Gravimetric Method	187	133	500	2000		±4.473 mg/l at 592.0 mg/l	
12	Calcium, mg/l LDL: 5.0 mg/l	IS 3025 (Part 40) : 1991, R : 2009, EDTA Method	28.5	25.0	75	200		±2.512 mg/l at 99.8 mg/l	
13	Copper, mg/l LDL: 0.03 mg/l	IS 3025 (Part 42) : 1992 R : 2009, AAS-Flame Method	BDL	BDL	0.05	1.5		±0.131 mg/l at 4.90 mg/l	
14	Manganese, mg/l LDL: 0.05 mg/l	IS 3025 (Part 59) : 2006, AAS-Flame Method	0.07	BDL	0.1	0.3		±0.026 mg/l at 2.44 mg/l	
15	Sulphate, mg/l LDL: 2.0 mg/l	APHA, 23rd Edition,2017, 4500- SO42- E Turbidimetric Method	82	99	200	400		±0.640 mg/l at 19.88 mg/l	
16	Nitrate, mg/l LDL: 0.5 mg/l	APHA, 23rd Edition,2017, 4500, B UV-Spectrophotometric Method	3.56	2.79	45	No relaxation		±0.528 mg/l at 20.41 mg/l	
17	Fluoride, mg/l LDL: 0.1 mg/l	APHA, 23rd Edition,2017, 4500, F- D SPADNS Method	0.31	0.24	1	1.5		±0.014 mg/l at 0.98 mg/l	
18	Selenium, mg/l LDL: 0.001 mg/l	IS 3025 (Part 56):2003 AAS- VGA Method	BDL	BDL	0.01	No relaxation		±0.000938 mg/l at 0.001 mg/l	
19	Arsenic, mg/l LDL: 0.002 mg/l	IS 3025 (Part 37):1988,R 2003, AAS- VGA Method	BDL	BDL	0.01	0.05		±0.0081 mg/l at 0.018 mg/l	
20	Lead, mg/l LDL: 0.005 mg/l	APHA, 23rd Edition,2017, 3113B, AAS-GTA Method	BDL	BDL	0.01	No relaxation		±0.000266 mg/l at 0.005 mg/l	
21	Zinc, mg/l LDL: 0.01 mg/l	IS 3025 (Part 49) : 1994, R : 2009, AAS-Flame Method	0.16	0.02	5	15		±0.0013 mg/l at 0.01 mg/l	
22	Total Chromium, mg/l LDL: 0.05 mg/l	IS 3025 (Part 52) : 2003, AAS-Flame Method	BDL	BDL	0.05	No relaxation		±0.004 mg/l at 0.05 mg/l	
23	Total Coliform, MPN/100 ml	APHA, 22nd Edition, 9221 Multiple Tube Fermentation Tech.	NIL	NIL	Nil	No relaxation		---	
24	Boron, mg/l LDL: 0.5 mg/l	APHA, 23rd Edition,2017, 4500-B, Carmine Method	BDL	BDL	0.5	1		±0.310 mg/l at 5.16 mg/l	

*Except Sl. No. 10 for which Acceptable Limit is Min

LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit

R.K Thakur
Junior Scientific Asst

M. Reagan Singh
Technical Manager

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Month	February	2022	Area	Jamuna and Kotma	Report No.	FB22JK
Customer	South Eastern Coalfields Ltd (SECL), Bilaspur			Date of Issue	14-03-22 10:33	
Project	Govinada UG		Sample Ref. No.	CMPDI/ENV/HSD/2022/91, Date:- 14/02/2022		
Sampling Stations	vi	Output of Kotma Guest House			Date of Sampling	14-Feb-2022

Sl. No.	Parameter	Method of Analysis	Date of Analysis		14-Feb-2022		to	7-Mar-22	Uncertainty of Measurement (at 95% Confidence Level & K= 1.96)
			Observed Values		Acceptable Limit (Max)*	Permissible Limit in the Absence of Alternate Source (Max)			
1	Colour, Hazen LDL: 1.0 Hazen	APHA, 23rd Edition,2017, 2120. C. Spectrometric single wavelength method	13		5	15		±1.05 Hazen at 49.86 Hazen	
2	Odour	IS 3025 (Part 5):1983, Physical (Qualitative)	Agreeable		Agreeable	Agreeable		None	
3	Phenolic compounds, mg/l LDL: 0.001 mg/l	APHA, 23rd Edition,2017, 5530. C. Chloroform Extraction Method	BDL		0.001	0.002		±0.0204 mg/l at 0.100 mg/l	
4	Turbidity, NTU LDL: 1.0 NTU	IS 3025 (Part 10):1984, R : 2006, Nephelometric Method	BDL		1	5		±0.855 NTU at 41.58 NTU	
5	pH LDL: 4.00	IS 3025 (Part 11):1983, R : 2012, Electrometric Method	7.27		6.5-8.5	No relaxation		±0.1272 at 7.01	
6	Alkalinity, mg/l as CaCO ₃ LDL: 5.0 mg/l	IS 3025(Part 23):1986,R 2003 Titration Method	51		200	600		±0.19696 mg/l at 10.0 mg/l	
7	Total Hardness, mg/l as CaCO ₃ LDL: 4.0 mg/l	IS 3025 (Part 21):2009, EDTA Method	80		200	600		±11.545 mg/l at 612.8 mg/l	
8	Iron, mg/l LDL: 0.05 mg/l	IS 3025 (Part 53) :2003, R:2009 AAS-Flame Method	BDL		0.3	No relaxation		±0.0782 mg/l at 7.95 mg/l	
9	Chlorides, mg/l LDL: 5.0 mg/l	IS 3025(Part 32):1988 , R : 2007, Argentometric Method	16.3		250	1000		±6.551 mg/l at 253.5 mg/l	
10	Residual Free Chlorine, mg/l LDL: 0.1 mg/l	APHA, 23rd Edition,2017, 4500G, DPD Colorimetric Method	BDL		0.2	1		±0.0082 mg/l at 0.1 mg/l	
11	Total Dissolved Solids, mg/l LDL: 30.0 mg/l	IS 3025 (Part 16):1984 R : 2006, Gravimetric Method	125		500	2000		±4.473 mg/l at 592.0 mg/l	
12	Calcium, mg/l LDL: 5.0 mg/l	IS 3025 (Part 40): 1991, R : 2009, EDTA Method	19.0		75	200		±2.512 mg/l at 99.8 mg/l	
13	Copper, mg/l LDL: 0.03 mg/l	IS 3025 (Part 42) : 1992 R : 2009, AAS-Flame Method	BDL		0.05	1.5		±0.131 mg/l at 4.90 mg/l	
14	Manganese, mg/l LDL: 0.05 mg/l	IS 3025 (Part 59) : 2006, AAS-Flame Method	BDL		0.1	0.3		±0.026 mg/l at 2.44 mg/l	
15	Sulphate, mg/l LDL: 2.0 mg/l	APHA, 23rd Edition,2017, 4500- SO42- E Turbidimetric Method	73		200	400		±0.640 mg/l at 19.88 mg/l	
16	Nitrate, mg/l LDL: 0.5 mg/l	APHA, 23rd Edition,2017, 4500, B UV-Spectrophotometric Method	BDL		45	No relaxation		±0.528 mg/l at 20.41 mg/l	
17	Fluoride, mg/l LDL: 0.1 mg/l	APHA, 23rd Edition,2017, 4500, F- D SPADNS Method	0.24		1	1.5		±0.014 mg/l at 0.98 mg/l	
18	Selenium, mg/l LDL: 0.001 mg/l	IS 3025 (Part 56):2003 AAS- VGA Method	BDL		0.01	No relaxation		±0.000938 mg/l at 0.001 mg/l	
19	Arsenic, mg/l LDL: 0.002 mg/l	IS 3025 (Part 37):1988,R 2003, AAS- VGA Method	BDL		0.01	0.05		±.0081 mg/l at 0.018 mg/l	
20	Lead, mg/l LDL: 0.005 mg/l	APHA, 23rd Edition,2017, 3113B, AAS-GTA Method	BDL		0.01	No relaxation		±0.000266 mg/l at 0.005 mg/l	
21	Zinc, mg/l LDL: 0.01 mg/l	IS 3025 (Part 49) : 1994, R : 2009, AAS-Flame Method	0.09		5	15		±0.0013 mg/l at 0.01 mg/l	
22	Total Chromium, mg/l LDL: 0.05 mg/l	IS 3025 (Part 52) : 2003, AAS-Flame Method	BDL		0.05	No relaxation		±0.004 mg/l at 0.05 mg/l	
23	Total Coliform, MPN/100 ml	APHA, 22nd Edition, 9221 Multiple Tube Fermentation Tech.	NIL		Nil	No relaxation		---	
24	Boron, mg/l LDL: 0.5 mg/l	APHA, 23rd Edition,2017, 4500-B, Carmine Method	BDL		0.5	1		±0.310 mg/l at 5.16 mg/l	

*Except Sl. No. 10 for which Acceptable Limit is Min

LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit

R.K Thakur
Junior Scientific Asst

M. Reagan Singh
Technical Manager

Note: The results above relate to the samples tested as received. This report cannot be reproduced in part or full without the written permission of the HOD (Env), CMPDI, RI-V. The Green, Yellow and Red color highlights in observed values indicate acceptable values, values exceeding acceptable limits but below permissible limits and values exceeding permissible limits respectively.



Month	March	2022	Area	Jamuna and Kotma	Report No.	MR22JK
Customer	South Eastern Coalfields Ltd (SECL), Bilaspur			Date of Issue	29-03-2022 15:31	
Project	Govinada UG		Sample Ref. No.	CMPDI/ENV/HSD/2022/138, Date:- 06/03/2022		
Sampling Stations	iv	Output of Govinda filter plant			Date of Sampling	5-Mar-2022
	v	Output of Kotma filter plant			Date of Sampling	5-Mar-2022

Sl. No.	Parameter	Method of Analysis	Date of Analysis		5-Mar-2022		Uncertainty of Measurement (at 95% Confidence Level & K= 1.96)
			Observed Values		Acceptable Limit (Max)*	Permissible Limit in the Absence of Alternate Source (Max)	
			iv	v			
1	Colour, Hazen LDL: 1.0 Hazen	APHA, 23rd Edition, 2017, 2120. C. Spectrometric single wavelength method	11	2	5	15	±1.05 Hazen at 49.86 Hazen
2	Odour	IS 3025 (Part 5):1983, Physical (Qualitative)	Agreeable	Agreeable	Agreeable	Agreeable	None
3	Phenolic compounds, mg/l LDL: 0.001 mg/l	APHA, 23rd Edition, 2017, 5530. C, Chloroform Extraction Method	BDL	BDL	0.001	0.002	±0.0204 mg/l at 0.100 mg/l
4	Turbidity, NTU LDL: 1.0 NTU	IS 3025 (Part 10):1984, R : 2006, Nephelometric Method	29	2	1	5	±0.855 NTU at 41.58 NTU
5	pH LDL: 4.00	IS 3025 (Part 11):1983, R : 2012, Electrometric Method	7.11	7.16	6.5-8.5	No relaxation	±0.1272 at 7.01
6	Alkalinity, mg/l as CaCO ₃ LDL: 5.0 mg/l	IS 3025(Part 23):1986,R 2003 Titration Method	80	55	200	600	±0.19696 mg/l at 10.0 mg/l
7	Total Hardness, mg/l as CaCO ₃ LDL: 4.0 mg/l	IS 3025 (Part 21):2009, EDTA Method	84	90	200	600	±11.545 mg/l at 612.8 mg/l
8	Iron, mg/l LDL: 0.05 mg/l	IS 3025 (Part 53) :2003, R:2009 AAS-Flame Method	0.07	BDL	0.3	No relaxation	±0.0782 mg/l at 7.95 mg/l
9	Chlorides, mg/l LDL: 5.0 mg/l	IS 3025(Part 32):1988 , R : 2007, Argentometric Method	21.0	16.5	250	1000	±6.551 mg/l at 253.5 mg/l
10	Residual Free Chlorine, mg/l LDL: 0.1 mg/l	APHA, 23rd Edition, 2017, 4500G, DPD Colorimetric Method	BDL	BDL	0.2	1	±0.0082 mg/l at 0.1 mg/l
11	Total Dissolved Solids, mg/l LDL: 30.0 mg/l	IS 3025 (Part 16):1984 R : 2006, Gravimetric Method	177	174	500	2000	±4.473 mg/l at 592.0 mg/l
12	Calcium, mg/l LDL: 5.0 mg/l	IS 3025 (Part 40): 1991, R : 2009, EDTA Method	23.2	28.0	75	200	±2.512 mg/l at 99.8 mg/l
13	Copper, mg/l LDL: 0.03 mg/l	IS 3025 (Part 42) : 1992 R : 2009, AAS-Flame Method	BDL	BDL	0.05	1.5	±0.131 mg/l at 4.90 mg/l
14	Manganese, mg/l LDL: 0.05 mg/l	IS 3025 (Part 59) : 2006, AAS-Flame Method	BDL	BDL	0.1	0.3	±0.026 mg/l at 2.44 mg/l
15	Sulphate, mg/l LDL: 2.0 mg/l	APHA, 23rd Edition, 2017, 4500-SO42- E Turbidimetric Method	4	8	200	400	±0.640 mg/l at 19.88 mg/l
16	Nitrate, mg/l LDL: 0.5 mg/l	APHA, 23rd Edition, 2017, 4500, B UV-Spectrophotometric Method	5.74	4.40	45	No relaxation	±0.528 mg/l at 20.41 mg/l
17	Fluoride, mg/l LDL: 0.1 mg/l	APHA, 23rd Edition, 2017, 4500, F- D SPADNS Method	0.17	0.23	1	1.5	±0.014 mg/l at 0.98 mg/l
18	Selenium, mg/l LDL: 0.001 mg/l	IS 3025 (Part 56):2003 AAS- VGA Method	BDL	BDL	0.01	No relaxation	±0.000938 mg/l at 0.001 mg/l
19	Arsenic, mg/l LDL: 0.002 mg/l	IS 3025 (Part 37):1988,R 2003, AAS- VGA Method	BDL	BDL	0.01	0.05	±0.081 mg/l at 0.018 mg/l
20	Lead, mg/l LDL: 0.005 mg/l	APHA, 23rd Edition, 2017, 3113B, AAS-GTA Method	BDL	BDL	0.01	No relaxation	±0.000266 mg/l at 0.005 mg/l
21	Zinc, mg/l LDL: 0.01 mg/l	IS 3025 (Part 49) : 1994, R : 2009, AAS-Flame Method	0.02	0.06	5	15	±0.0013 mg/l at 0.01 mg/l
22	Total Chromium, mg/l LDL: 0.05 mg/l	IS 3025 (Part 52) : 2003, AAS-Flame Method	BDL	BDL	0.05	No relaxation	±0.004 mg/l at 0.05 mg/l
23	Total Coliform, MPN/100 ml	APHA, 22nd Edition, 9221 Multiple Tube Fermentation Tech.	NIL	NIL	Nil	No relaxation	---
24	Boron, mg/l LDL: 0.5 mg/l	APHA, 23rd Edition, 2017, 4500-B, Carmine Method	BDL	BDL	0.5	1	±0.310 mg/l at 5.16 mg/l

*Except Sl. No. 10 for which Acceptable Limit is Min

LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit

R.K Thakur

Junior Scientific Asst

Kumaravel. C

Manager (Env.)

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CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED

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A Mini-Ratna Company

Environment Laboratory, Regional Institute-V

DRINKING WATER ANALYSIS REPORT

CMPDI Complex, Songanga Colony

Bilaspur (C.G.)- 495 006

Phone: (07752) 258485

email: hk.gour@coalindia.in; mr.singh@coalindia.in

Month	March	2022	Area	Jamuna and Kotma	Report No.	MR22JK
Customer	South Eastern Coalfields Ltd (SECL), Bilaspur			Date of Issue	29-03-2022 15:31	
Project	Govinada UG		Sample Ref. No.	CMPDI/ENV/HSD/2022/138, Date:- 06/03/2022		
Sampling Stations	vi	Output of Kotma Guest House			Date of Sampling	5-Mar-2022

Sl. No.	Parameter	Method of Analysis	Date of Analysis		5-Mar-2022		Uncertainty of Measurement (at 95% Confidence Level & K= 1.96)
			Observed Values		IS 10500: 2012		
			vi		Acceptable Limit (Max)*	Permissible Limit in the Absence of Alternate Source (Max)	
1	Colour, Hazen LDL: 1.0 Hazen	APHA, 23rd Edition, 2017, 2120. C. Spectrometric single wavelength method	BDL		5	15	±1.05 Hazen at 49.86 Hazen
2	Odour	IS 3025 (Part 5):1983, Physical (Qualitative)	Agreeable		Agreeable	Agreeable	None
3	Phenolic compounds, mg/l LDL: 0.001 mg/l	APHA, 23rd Edition, 2017, 5530. C, Chloroform Extraction Method	BDL		0.001	0.002	±0.0204 mg/l at 0.100 mg/l
4	Turbidity, NTU LDL: 1.0 NTU	IS 3025 (Part 10):1984, R : 2006, Nephelometric Method	1		1	5	±0.855 NTU at 41.58 NTU
5	pH LDL: 4.00	IS 3025 (Part 11):1983, R : 2012, Electrometric Method	7.09		6.5-8.5	No relaxation	±0.1272 at 7.01
6	Alkalinity, mg/l as CaCO ₃ LDL: 5.0 mg/l	IS 3025(Part 23):1986,R 2003 Titration Method	60		200	600	±0.19696 mg/l at 10.0 mg/l
7	Total Hardness, mg/l as CaCO ₃ LDL: 4.0 mg/l	IS 3025 (Part 21):2009, EDTA Method	92		200	600	±11.545 mg/l at 612.8 mg/l
8	Iron, mg/l LDL: 0.05 mg/l	IS 3025 (Part 53) :2003, R:2009 AAS-Flame Method	0.06		0.3	No relaxation	±0.0782 mg/l at 7.95 mg/l
9	Chlorides, mg/l LDL: 5.0 mg/l	IS 3025(Part 32):1988 , R : 2007, Argentometric Method	18.0		250	1000	±6.551 mg/l at 253.5 mg/l
10	Residual Free Chlorine, mg/l LDL: 0.1 mg/l	APHA, 23rd Edition, 2017, 4500G, DPD Colorimetric Method	BDL		0.2	1	±0.0082 mg/l at 0.1 mg/l
11	Total Dissolved Solids, mg/l LDL: 30.0 mg/l	IS 3025 (Part 16):1984 R : 2006, Gravimetric Method	195		500	2000	±4.473 mg/l at 592.0 mg/l
12	Calcium, mg/l LDL: 5.0 mg/l	IS 3025 (Part 40): 1991, R : 2009, EDTA Method	28.0		75	200	±2.512 mg/l at 99.8 mg/l
13	Copper, mg/l LDL: 0.03 mg/l	IS 3025 (Part 42) : 1992 R : 2009, AAS-Flame Method	BDL		0.05	1.5	±0.131 mg/l at 4.90 mg/l
14	Manganese, mg/l LDL: 0.05 mg/l	IS 3025 (Part 59) : 2006, AAS-Flame Method	BDL		0.1	0.3	±0.026 mg/l at 2.44 mg/l
15	Sulphate, mg/l LDL: 2.0 mg/l	APHA, 23rd Edition, 2017, 4500-SO42- E Turbidimetric Method	12		200	400	±0.640 mg/l at 19.88 mg/l
16	Nitrate, mg/l LDL: 0.5 mg/l	APHA, 23rd Edition, 2017, 4500, B UV-Spectrophotometric Method	4.87		45	No relaxation	±0.528 mg/l at 20.41 mg/l
17	Fluoride, mg/l LDL: 0.1 mg/l	APHA, 23rd Edition, 2017, 4500, F- D SPADNS Method	0.45		1	1.5	±0.014 mg/l at 0.98 mg/l
18	Selenium, mg/l LDL: 0.001 mg/l	IS 3025 (Part 56):2003 AAS- VGA Method	BDL		0.01	No relaxation	±0.000938 mg/l at 0.001 mg/l
19	Arsenic, mg/l LDL: 0.002 mg/l	IS 3025 (Part 37):1988,R 2003, AAS- VGA Method	BDL		0.01	0.05	±.0081 mg/l at 0.018 mg/l
20	Lead, mg/l LDL: 0.005 mg/l	APHA, 23rd Edition, 2017, 3113B, AAS-GTA Method	BDL		0.01	No relaxation	±0.000266 mg/l at 0.005 mg/l
21	Zinc, mg/l LDL: 0.01 mg/l	IS 3025 (Part 49) : 1994, R : 2009, AAS-Flame Method	BDL		5	15	±0.0013 mg/l at 0.01 mg/l
22	Total Chromium, mg/l LDL: 0.05 mg/l	IS 3025 (Part 52) : 2003, AAS-Flame Method	BDL		0.05	No relaxation	±0.004 mg/l at 0.05 mg/l
23	Total Coliform, MPN/100 ml	APHA, 22nd Edition, 9221 Multiple Tube Fermentation Tech.	NIL		Nil	No relaxation	---
24	Boron, mg/l LDL: 0.5 mg/l	APHA, 23rd Edition, 2017, 4500-B, Carmine Method	BDL		0.5	1	±0.310 mg/l at 5.16 mg/l

*Except Sl. No. 10 for which Acceptable Limit is Min

LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit

R.K Thakur

Junior Scientific Asst

Kumaravel. C
Manager (Env.)

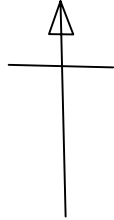
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81° 55'

JAMUNA & KOTMA AREA

S.E.C.L.

N



LEASE BOUNDARY

BHADRA U/G

KOTMARS

To Chirimiri

P.W.D ROAD TO KOTMA

BHADRA 5 & 6

To Anuppur

Quarry O.C.M

Bhadra 7 & 8

JAM 9&10

GOVINDA U/G

GOV. 6&7

PRIYADARSHANI JAMUNA O.C.M

HARAD U/G

JAM 11&12

G.M. OFFICE

JAMUNA U/G

JAM. Inc.1&2

25 W WIRELESS STATION

KOTMA U/G

23° 10'

23° 10'

DAIKHAL

To Harrad

HARRAD R.S

HARAD

KOT(W) 7 & 8

KOT. No-4 No-2

KEWAI RIVER

GORBI R.

CHHOHRI

S.E.R.L.Y

KOTMA WEST O.C.M

T R

KOT(W)3&4

No-5

AMADAND O.C

AMADAND U.G

BARTARAI UG

LATAR DAM

ENVIRONMET AUDIT
STATEMENT 2021 - 22

GOVINDA U G

81° 55'