

ENVIRONMENTAL MONITORING REPORT

JULY TO SEPTEMBER, 2018

Project : Dharmapura Iron Ore Mine (ML No.2543)

**R.M. Block, Ramgad Range, Dharmapura village,
Sandur Taluk, Ballari Dist., Karnataka.**

Lessee

**M/s. VNK Menon
No. 6, KHB colony Sandur,
Ballari District, Karnataka**

CONSULTANT

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BS-OHSAS-18001-2007
12-Q-1800013-TIC

Table No. 1

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESEL/A/FORM/03/00

Project : Dharmapura Iron Ore Mine (ML No.2543)
Client : M/s. V.N.K. Menon
Station at & Code : A - I, Core Zone (ML Area)
Duration : 24 Hrs
Month : July, 2018
Date of Report : 06.08.2018
Reference IS 5182

Date of Sampling		Concentration						Benzene (C ₆ H ₆), µg/m ³
		Report No	Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	
02.07.2018		MES/A/3757	11	13	56	23	<20	<1
03.07.2018		MES/A/3782	12	18	50	26	<20	<1
13.07.2018		MES/A/4001	10	16	48	27	<20	<1
14.07.2018		MES/A/4038	9	11	63	35	<20	<1
20.07.2018		MES/A/4172	11	15	46	27	<20	<1
21.07.2018		MES/A/4215	10	14	50	26	<20	<1
23.07.2018		MES/A/4260	13	18	40	22	<20	<1
24.07.2018		MES/A/4301	11	15	57	28	<20	<1
Limits for Industrial, Residential, Rural and other Areas			80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Report No	Concentration					Carbon Monoxide* (CO), mg/m ³	Ozone* (O ₃), µg/m ³
		Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³			
02.07.2018	MES/A/3757	0.11	<0.5	<0.5	<0.5	0.45	25	
03.07.2018	MES/A/3782	0.06	<0.5	<0.5	<0.5	0.36	21	
13.07.2018	MES/A/4001	0.17	<0.5	<0.5	<0.5	0.45	23	
14.07.2018	MES/A/4038	0.06	<0.5	<0.5	<0.5	0.25	25	
20.07.2018	MES/A/4172	0.14	<0.5	<0.5	<0.5	0.46	24	
21.07.2018	MES/A/4215	0.13	<0.5	<0.5	<0.5	0.35	21	
23.07.2018	MES/A/4260	0.05	<0.5	<0.5	<0.5	0.44	20	
24.07.2018	MES/A/4301	0.16	<0.5	<0.5	<0.5	0.33	23	
Limits for Industrial, Residential, Rural and other Areas		1.0	20	6	1	4	180	
		24 Hrs	Annual	Annual	Annual	1 Hr	1 Hr	

Note : * Parameters monitored for period of 1 hr

Note : * Parameters monitored for period of 1 hr

(Signature)
(M.R.DURGA PRASAD)

GOVT. ANALYST

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Table No. 2

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESEL/A/FORM/03/00

Project : Dharmapura Iron Ore Mine (ML No.2543)
Client : M/s. V.N.K. Menon
Station at & Code : A - II, Dharmapura
Duration : 24 Hrs
Month : July, 2018
Date of Report : 06.08.2018
Reference IS 5182

Date of Sampling		Concentration						
		Report No	Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	Benzene (C ₆ H ₆), µg/m ³
02.07.2018		MES/A/3762	12	15	35	19	<20	<1
03.07.2018		MES/A/3787	10	13	48	25	<20	<1
13.07.2018		MES/A/4007	11	15	55	29	<20	<1
14.07.2018		MES/A/4044	9	11	49	28	<20	<1
20.07.2018		MES/A/4178	11	16	50	28	<20	<1
21.07.2018		MES/A/4221	10	13	43	24	<20	<1
23.07.2018		MES/A/4267	7	10	53	26	<20	<1
24.07.2018		MES/A/4307	9	11	38	21	<20	<1
Limits for Industrial , Residential, Rural and other Areas			80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Concentration						Ozone* (O ₃), µg/m ³
	Report No	Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	
02.07.2018	MES/A/3762	0.05	<0.5	<0.5	<0.5	0.16	23
03.07.2018	MES/A/3787	<0.05	<0.5	<0.5	<0.5	0.08	20
13.07.2018	MES/A/4007	0.05	<0.5	<0.5	<0.5	0.15	26
14.07.2018	MES/A/4044	0.11	<0.5	<0.5	<0.5	0.26	24
20.07.2018	MES/A/4178	0.06	<0.5	<0.5	<0.5	0.22	21
21.07.2018	MES/A/4221	0.15	<0.5	<0.5	<0.5	0.28	23
23.07.2018	MES/A/4267	0.09	<0.5	<0.5	<0.5	0.32	20
24.07.2018	MES/A/4307	0.11	<0.5	<0.5	<0.5	0.22	24
Limits for Industrial , Residential, Rural and other Areas		1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr
Note : * Parameters monitored for period of 1 hr							

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Table No. 3

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESEL/A/FORM/03/00

Project : Dharmapura Iron Ore Mine (ML No.2543)
Client : M/s. V.N.K. Menon
Station at & Code : A - III, Yeshwanthanagar
Duration : 24 Hrs
Month : July, 2018
Date of Report : 06.08.2018
Reference IS 5182

Date of Sampling	Concentration						
	Report No	Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	Benzene (C ₆ H ₆), µg/m ³
02.07.2018	MES/A/3763	7	9	57	28	<20	<1
03.07.2018	MES/A/3788	11	13	43	23	<20	<1
13.07.2018	MES/A/4008	12	18	50	27	<20	<1
14.07.2018	MES/A/4045	10	16	38	19	<20	<1
20.07.2018	MES/A/4179	11	14	54	25	<20	<1
21.07.2018	MES/A/4222	9	12	43	22	<20	<1
23.07.2018	MES/A/4268	12	14	55	29	<20	<1
24.07.2018	MES/A/4308	11	15	63	31	<20	<1
Limits for Industrial, Residential, Rural and other Areas		80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Concentration							Ozone* (O ₃), µg/m ³
	Report No	Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³		
02.07.2018	MES/A/3763	0.08	<0.5	<0.5	<0.5	0.33	24	
03.07.2018	MES/A/3788	0.16	<0.5	<0.5	<0.5	0.15	23	
13.07.2018	MES/A/4008	0.14	<0.5	<0.5	<0.5	0.31	22	
14.07.2018	MES/A/4045	0.06	<0.5	<0.5	<0.5	0.24	20	
20.07.2018	MES/A/4179	0.11	<0.5	<0.5	<0.5	0.15	24	
21.07.2018	MES/A/4222	0.16	<0.5	<0.5	<0.5	0.23	20	
23.07.2018	MES/A/4268	0.05	<0.5	<0.5	<0.5	0.11	20	
24.07.2018	MES/A/4308	0.11	<0.5	<0.5	<0.5	0.34	25	
Limits for Industrial, Residential, Rural and other Areas		1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr	
Note : * Parameters monitored for period of 1 hr								

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Table No. 4

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESELA/FORM/03/00

Project : Dharmapura Iron Ore Mine (ML No.2543)

Client : M/s. V.N.K. Menon

Station at & Code : A - IV Ramgad

Duration : 24 Hrs

Month : July, 2018

Date of Report : 06.08.2018

Reference IS 5182

Date of Sampling	Report No	Concentration					
		Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	Benzene (C ₆ H ₆), µg/m ³
02.07.2018	MES/A/3759	10	13	48	23	<20	<1
03.07.2018	MES/A/3784	12	14	50	26	<20	<1
13.07.2018	MES/A/4003	11	15	56	27	<20	<1
14.07.2018	MES/A/4040	9	10	38	19	<20	<1
20.07.2018	MES/A/4175	7	11	47	22	<20	<1
21.07.2018	MES/A/4218	10	12	55	28	<20	<1
23.07.2018	MES/A/4264	11	14	50	27	<20	<1
24.07.2018	MES/A/4304	11	13	48	26	<20	<1
Limits for Industrial, Residential, Rural and other Areas		80	80	100	60	400	5
		24 Hrs	24 Hrs	24 Hrs	24 Hrs	24 Hrs	Annual

Date of Sampling	Report No	Concentration					
		Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	Ozone* (O ₃), µg/m ³
02.07.2018	MES/A/3759	0.15	<0.5	<0.5	<0.5	0.24	27
03.07.2018	MES/A/3784	0.06	<0.5	<0.5	<0.5	0.36	26
13.07.2018	MES/A/4003	0.16	<0.5	<0.5	<0.5	0.22	20
14.07.2018	MES/A/4040	<0.05	<0.5	<0.5	<0.5	0.42	23
20.07.2018	MES/A/4175	0.11	<0.5	<0.5	<0.5	0.35	24
21.07.2018	MES/A/4218	0.13	<0.5	<0.5	<0.5	0.24	28
23.07.2018	MES/A/4264	0.05	<0.5	<0.5	<0.5	0.06	26
24.07.2018	MES/A/4304	0.09	<0.5	<0.5	<0.5	0.11	20
Limits for Industrial, Residential, Rural and other Areas		1.0	20	6	1	4	180
		24 Hrs	Annual	Annual	Annual	1 Hr	1 Hr
Note : * Parameters monitored for period of 1 hr							

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Table No. 5

Analysis Report of Fugitive Emission

MESEL/A/FORM/03/00

Name of the Project	: Dharmapura Iron Ore Mine (ML No.2543)		
Name of the Client	: M/s. V.N.K. Menon		
Station at & Code	: A - VI, Loading point		
Duration	: 8 Hrs		
Month	: July, 2018		
Date of Report	: 06.08.2018		
Date of sample	Report No	Particulate mater ($\mu\text{g}/\text{m}^3$)	
21.07.2018	MES/A/4216	365	
24.07.2018	MES/A/4302	248	

Station at & Code	: A - VII, Dumping point		
Duration	: 8 Hrs		
Month	: July, 2018		
Date of Report	: 06.08.2018		
Date of sample	Report No	Particulate mater ($\mu\text{g}/\text{m}^3$)	
20.07.2018	MES/A/4173	415	
23.07.2018	MES/A/4261	358	

Station at & Code	: A - VIII, Haulage Road		
Duration	: 8 Hrs		
Month	: July, 2018		
Date of Report	: 06.08.2018		
Date of sample	Report No	Particulate mater ($\mu\text{g}/\text{m}^3$)	
20.07.2017	MES/A/4171	445	
23.07.2018	MES/A/4262	359	
Ref : Environmental (Protection) Rules, 2010 (Sixth Amendment)			
Permissible limits for Fugitive Emissions		Particulate matter ($\mu\text{g}/\text{m}^3$)	
		1200 $\mu\text{g}/\text{m}^3$	


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Table No. 6

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESELA/FORM/03/00

Project : Dharmapura Iron Ore Mine (ML No.2543)
Client : M/s. V.N.K. Menon
Station at & Code : A - I, Core Zone (ML Area)
Duration : 24 Hrs
Month : August, 2018
Date of Report : 06.09.2018
Reference IS 5182

Date of Sampling	Concentration						Benzene (C ₆ H ₆), µg/m ³
	Report No	Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	
10.08.2018	MES/A/4590	9	11	40	24	<20	<1
11.08.2018	MES/A/4622	10	15	49	23	<20	<1
13.08.2018	MES/A/4654	6	14	50	26	<20	<1
14.08.2018	MES/A/4707	10	18	53	27	<20	<1
24.08.2018	MES/A/4922	7	15	55	26	<20	<1
25.08.2018	MES/A/4955	10	15	33	22	<20	<1
27.08.2018	MES/A/4986	12	13	34	22	<20	<1
28.08.2018	MES/A/5015	11	18	38	26	<20	<1
Limits for Industrial , Residential, Rural and other Areas		80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Concentration						Ozone* (O ₃), µg/m ³
	Report No	Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	
10.08.2018	MES/A/4590	0.15	<0.5	<0.5	<0.5	0.05	23
11.08.2018	MES/A/4622	0.13	<0.5	<0.5	<0.5	0.25	20
13.08.2018	MES/A/4654	0.06	<0.5	<0.5	<0.5	0.45	23
14.08.2018	MES/A/4707	0.12	<0.5	<0.5	<0.5	0.25	21
24.08.2018	MES/A/4922	0.05	<0.5	<0.5	<0.5	0.24	24
25.08.2018	MES/A/4955	0.15	<0.5	<0.5	<0.5	0.30	20
27.08.2018	MES/A/4986	0.06	<0.5	<0.5	<0.5	0.22	20
28.08.2018	MES/A/5015	0.09	<0.5	<0.5	<0.5	0.26	21
Limits for Industrial , Residential, Rural and other Areas		1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr
Note : * Parameters monitored for period of 1 hr							

(Signature)
(M.R.DURGA PRASAD)

GOVT. ANALYST

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12-Q-1800013-TIC

Table No. 7

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESELA/FORM/03/00

Project : Dharmapura Iron Ore Mine (ML No.2543)
Client : M/s. V.N.K. Menon
Station at & Code : A - II, Dharmapura
Duration : 24 Hrs
Month : August, 2018
Date of Report : 06.09.2018
Reference IS 5182

Date of Sampling	Concentration						Benzene (C ₆ H ₆), µg/m ³
	Report No	Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	
10.08.2018	MES/A/4596	8	10	27	17	<20	<1
11.08.2018	MES/A/4628	10	11	40	23	<20	<1
13.08.2018	MES/A/4668	7	10	42	25	<20	<1
14.08.2018	MES/A/4721	9	11	50	27	<20	<1
24.08.2018	MES/A/4929	11	16	45	24	<20	<1
25.08.2018	MES/A/4961	13	15	37	21	<20	<1
27.08.2018	MES/A/4992	8	12	35	20	<20	<1
28.08.2018	MES/A/5022	10	10	44	27	<20	<1
Limits for Industrial , Residential, Rural and other Areas		80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Concentration						Ozone* (O ₃), µg/m ³
	Report No	Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	
10.08.2018	MES/A/4596	0.08	<0.5	<0.5	<0.5	0.13	20
11.08.2018	MES/A/4628	0.05	<0.5	<0.5	<0.5	0.17	24
13.08.2018	MES/A/4668	0.07	<0.5	<0.5	<0.5	0.16	20
14.08.2018	MES/A/4721	0.05	<0.5	<0.5	<0.5	0.20	20
24.08.2018	MES/A/4929	0.12	<0.5	<0.5	<0.5	0.14	23
25.08.2018	MES/A/4961	0.13	<0.5	<0.5	<0.5	0.15	24
27.08.2018	MES/A/4992	0.09	<0.5	<0.5	<0.5	0.18	29
28.08.2018	MES/A/5022	0.19	<0.5	<0.5	<0.5	0.09	22
Limits for Industrial , Residential, Rural and other Areas		1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr
Note : * Parameters monitored for period of 1 hr							

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Table No. 8

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESEL/A/FORM/03/00

Project : Dharmapura Iron Ore Mine (ML No.2543)
Client : M/s. V.N.K. Menon
Station at & Code : A - III, Yeshwanthanagar
Duration : 24 Hrs
Month : August, 2018
Date of Report : 06.09.2018
Reference IS 5182

Date of Sampling	Report No	Concentration					Benzene (C ₆ H ₆), µg/m ³
		Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	
10.08.2018	MES/A/4597	8	11	51	25	<20	<1
11.08.2018	MES/A/4629	9	15	30	20	<20	<1
13.08.2018	MES/A/4669	12	11	43	23	<20	<1
14.08.2018	MES/A/4722	10	12	42	21	<20	<1
24.08.2018	MES/A/4930	7	9	48	25	<20	<1
25.08.2018	MES/A/4962	11	13	37	22	<20	<1
27.08.2018	MES/A/4993	11	11	51	28	<20	<1
28.08.2018	MES/A/5023	6	13	39	21	<20	<1
Limits for Industrial, Residential, Rural and other Areas		80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Report No	Concentration					Ozone* (O ₃), µg/m ³
		Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	
10.08.2018	MES/A/4597	0.10	<0.5	<0.5	<0.5	0.15	20
11.08.2018	MES/A/4629	0.05	<0.5	<0.5	<0.5	0.14	26
13.08.2018	MES/A/4669	0.22	<0.5	<0.5	<0.5	0.25	29
14.08.2018	MES/A/4722	0.08	<0.5	<0.5	<0.5	0.15	20
24.08.2018	MES/A/4930	0.16	<0.5	<0.5	<0.5	0.08	25
25.08.2018	MES/A/4962	0.08	<0.5	<0.5	<0.5	0.17	28
27.08.2018	MES/A/4993	0.11	<0.5	<0.5	<0.5	0.19	22
28.08.2018	MES/A/5023	0.26	<0.5	<0.5	<0.5	0.23	24
Limits for Industrial, Residential, Rural and other Areas		1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr
Note : * Parameters monitored for period of 1 hr							


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BS-OHSAS-18001-2007
12-Q-1800013-TIC

Table No. 9

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESEL/A/FORM/03/00

Project : Dharmapura Iron Ore Mine (ML No.2543)
Client : M/s. V.N.K. Menon
Station at & Code : A - IV Ramgad
Duration : 24 Hrs
Month : August, 2018
Date of Report : 06.09.2018
Reference IS 5182

Date of Sampling	Concentration						Benzene (C ₆ H ₆), µg/m ³
	Report No	Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	
10.08.2018	MES/A/4592	13	18	43	21	<20	<1
11.08.2018	MES/A/4624	10	16	31	19	<20	<1
13.08.2018	MES/A/4661	8	17	45	22	<20	<1
14.08.2018	MES/A/4714	5	9	31	17	<20	<1
24.08.2018	MES/A/4926	12	15	44	23	<20	<1
25.08.2018	MES/A/4958	9	13	36	19	<20	<1
27.08.2018	MES/A/4989	12	12	47	23	<20	<1
28.08.2018	MES/A/5019	10	11	50	24	<20	<1
Limits for Industrial , Residential, Rural and other Areas		80	80	100	60	400	5
		24 Hrs	24 Hrs	24 Hrs	24 Hrs	24 Hrs	Annual

Date of Sampling	Concentration						Ozone* (O ₃), µg/m ³
	Report No	Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	
10.08.2018	MES/A/4592	0.15	<0.5	<0.5	<0.5	0.14	22
11.08.2018	MES/A/4624	0.07	<0.5	<0.5	<0.5	0.16	23
13.08.2018	MES/A/4661	0.08	<0.5	<0.5	<0.5	0.05	20
14.08.2018	MES/A/4714	0.09	<0.5	<0.5	<0.5	0.15	22
24.08.2018	MES/A/4926	0.15	<0.5	<0.5	<0.5	0.12	22
25.08.2018	MES/A/4958	0.11	<0.5	<0.5	<0.5	0.21	23
27.08.2018	MES/A/4989	0.15	<0.5	<0.5	<0.5	0.23	20
28.08.2018	MES/A/5019	0.13	<0.5	<0.5	<0.5	0.30	22
Limits for Industrial , Residential, Rural and other Areas		1.0	20	6	1	4	180
		24 Hrs	Annual	Annual	Annual	1 Hr	1 Hr
Note : * Parameters monitored for period of 1 hr							

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Table No. 10

Analysis Report of Fugitive Emission

MESEL/A/Form/03/00

Name of the Project	: Dharmapura Iron Ore Mine (ML No.2543)		
Name of the Client	: M/s. V.N.K. Menon		
Station at & Code	: A - VI, Loading point		
Duration	: 8 Hrs		
Month	: August, 2018		
Date of Report	: 06.09.2018		
Date of sample	Report No	Particulate mater ($\mu\text{g}/\text{m}^3$)	
25.08.2018	MES/A/4956	432	
28.08.2018	MES/A/5016	356	

Station at & Code	: A - VII, Dumping point		
Duration	: 8 Hrs		
Month	: August, 2018		
Date of Report	: 06.09.2018		
Date of sample	Report No	Particulate mater ($\mu\text{g}/\text{m}^3$)	
24.08.2018	MES/A/4923	325	
27.08.2018	MES/A/4987	335	

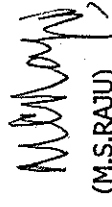
Station at & Code	: A - VIII, Haulage Road		
Duration	: 8 Hrs		
Month	: August, 2018		
Date of Report	: 06.09.2018		
Date of sample	Report No	Particulate mater ($\mu\text{g}/\text{m}^3$)	
24.08.2018	MES/A/4924	256	
28.08.2018	MES/A/5017	541	

Ref : Environmental (Protection) Rules, 2010 (Sixth Amendment)

Permissible limits for Fugitive Emissions	Particulate matter ($\mu\text{g}/\text{m}^3$)
	1200 $\mu\text{g}/\text{m}^3$


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Table No. 11

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESEL/A/FORM/03/00

Project : Dharmapura Iron Ore Mine (ML No.2543)
Client : M/s. V.N.K. Menon
Station at & Code : A - I, Core Zone (ML Area)
Duration : 24 Hrs
Month : September, 2018
Date of Report : 05.10.2018
Reference IS 5182

Date of Sampling		Concentration						Benzene (C ₆ H ₆), µg/m ³
		Report No	Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	
03.09.2018		MES/A/5138	10	13	56	30	<20	<1
04.09.2018		MES/A/5158	9	10	55	19	<20	<1
14.09.2018		MES/A/5386	7	13	38	25	<20	<1
15.09.2018		MES/A/5425	8	15	48	19	<20	<1
21.09.2018		MES/A/5574	9	8	48	26	<20	<1
22.09.2018		MES/A/5603	12	13	53	26	<20	<1
24.09.2018		MES/A/5632	10	11	49	27	<20	<1
25.09.2018		MES/A/5661	8	10	38	30	<20	<1
Limits for Industrial, Residential, Rural and other Areas			80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Concentration						Ozone* (O ₃), µg/m ³
	Report No	Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	
03.09.2018	MES/A/5138	0.22	<0.5	<0.5	<0.5	0.23	22
04.09.2018	MES/A/5158	0.02	<0.5	<0.5	<0.5	0.11	23
14.09.2018	MES/A/5386	0.09	<0.5	<0.5	<0.5	0.17	27
15.09.2018	MES/A/5425	0.15	<0.5	<0.5	<0.5	0.23	22
21.09.2018	MES/A/5574	0.09	<0.5	<0.5	<0.5	0.35	20
22.09.2018	MES/A/5603	0.08	<0.5	<0.5	<0.5	0.22	24
24.09.2018	MES/A/5632	0.15	<0.5	<0.5	<0.5	0.30	26
25.09.2018	MES/A/5661	0.23	<0.5	<0.5	<0.5	0.15	28
Limits for Industrial, Residential, Rural and other Areas		1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr
Note : * Parameters monitored for period of 1 hr							

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Table No. 12

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESEL/A/FORM/03/00

Project : Dharmapura Iron Ore Mine (ML No.2543)
Client : M/s. V.N.K. Menon
Station at & Code : A - II, Dharmapura
Duration : 24 Hrs
Month : September, 2018
Date of Report : 05.10.2018
Reference IS 5182

Date of Sampling	Concentration					
	Report No	Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³
03.09.2018	MES/A/5144	12	13	38	21	<20
04.09.2018	MES/A/5164	9	10	48	29	<20
14.09.2018	MES/A/5396	13	15	55	27	<20
15.09.2018	MES/A/5435	11	13	40	25	<20
21.09.2018	MES/A/5581	10	14	48	24	<20
22.09.2018	MES/A/5609	9	11	30	19	<20
24.09.2018	MES/A/5639	11	16	47	26	<20
25.09.2018	MES/A/5667	9	14	38	18	<20
Limits for Industrial ,		80	80	100	60	400
Residential, Rural and other Areas		24 Hrs	24 Hrs	24 Hrs	24 Hrs	24 Hrs
						5 Annual

Date of Sampling	Report No	Concentration					
		Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	Ozone* (O ₃), µg/m ³
03.09.2018	MES/A/5144	0.05	<0.5	<0.5	<0.5	0.11	25
04.09.2018	MES/A/5164	0.13	<0.5	<0.5	<0.5	0.22	21
14.09.2018	MES/A/5396	0.08	<0.5	<0.5	<0.5	0.19	23
15.09.2018	MES/A/5435	0.13	<0.5	<0.5	<0.5	0.16	24
21.09.2018	MES/A/5581	0.05	<0.5	<0.5	<0.5	0.22	26
22.09.2018	MES/A/5609	0.09	<0.5	<0.5	<0.5	0.07	20
24.09.2018	MES/A/5639	0.05	<0.5	<0.5	<0.5	0.09	21
25.09.2018	MES/A/5667	0.16	<0.5	<0.5	<0.5	0.10	25
Limits for Industrial ,		1.0	20	6	1	4	180
Residential, Rural and other Areas		24 Hrs	Annual	Annual	Annual	1 Hr	1 Hr
Note : * Parameters monitored for period of 1 hr							


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Table No. 13

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESEL/A/FORM/03/00

Project : Dharmapura Iron Ore Mine (ML No.2543)
Client : M/s. V.N.K. Menon
Station at & Code : A - III, Yeshwanthanagar
Duration : 24 Hrs
Month : September, 2018
Date of Report : 05.10.2018
Reference IS 5182

Date of Sampling	Concentration					
	Report No	Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³
03.09.2018	MES/A/5145	12	15	48	26	<20
04.09.2018	MES/A/5165	9	13	36	19	<20
14.09.2018	MES/A/5397	12	12	50	22	<20
15.09.2018	MES/A/5436	9	11	54	27	<20
21.09.2018	MES/A/5582	11	16	48	25	<20
22.09.2018	MES/A/5610	10	14	39	19	<20
24.09.2018	MES/A/5640	9	11	40	24	<20
25.09.2018	MES/A/5668	11	13	51	28	<20
Limits for Industrial, Residential, Rural and other Areas		80	80	100	60	400
		24 Hrs	24 Hrs	24 Hrs	24 Hrs	24 Hrs
						Annual
						5

Date of Sampling	Report No	Concentration					
		Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	Ozone* (O ₃), µg/m ³
03.09.2018	MES/A/5145	0.07	<0.5	<0.5	<0.5	0.13	20
04.09.2018	MES/A/5165	0.11	<0.5	<0.5	<0.5	0.17	25
14.09.2018	MES/A/5397	0.05	<0.5	<0.5	<0.5	0.31	25
15.09.2018	MES/A/5436	0.16	<0.5	<0.5	<0.5	0.22	24
21.09.2018	MES/A/5582	0.06	<0.5	<0.5	<0.5	0.31	20
22.09.2018	MES/A/5610	0.11	<0.5	<0.5	<0.5	0.22	21
24.09.2018	MES/A/5640	0.05	<0.5	<0.5	<0.5	0.15	20
25.09.2018	MES/A/5668	0.15	<0.5	<0.5	<0.5	0.48	24
Limits for Industrial, Residential, Rural and other Areas		1.0	20	6	1	4	180
		24 Hrs	Annual	Annual	Annual	1 Hr	1 Hr
Note : * Parameters monitored for period of 1 hr							

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12-Q-1800013-TIC

Table No. 14

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESEL/A/FORM/03/00

Project : Dharmapura Iron Ore Mine (ML No.2543)
Client : M/s. V.N.K. Menon
Station at & Code : A - IV Ramgad
Duration : 24 Hrs
Month : September, 2018
Date of Report : 05.10.2018
Reference IS 5182

Date of Sampling	Concentration						Benzene (C ₆ H ₆), µg/m ³
	Report No	Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	
03.09.2018	MES/A/5140	7	14	49	26	<20	<1
04.09.2018	MES/A/5160	9	15	55	27	<20	<1
14.09.2018	MES/A/5393	6	16	51	26	<20	<1
15.09.2018	MES/A/5432	8	13	48	29	<20	<1
21.09.2018	MES/A/5578	6	10	38	19	<20	<1
22.09.2018	MES/A/5606	9	11	50	23	<20	<1
24.09.2018	MES/A/5636	7	10	42	25	<20	<1
25.09.2018	MES/A/5664	9	11	53	24	<20	<1
Limits for Industrial, Residential, Rural and other Areas		80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Concentration						Ozone* (O ₃), µg/m ³
	Report No	Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	
03.09.2018	MES/A/5140	0.11	<0.5	<0.5	<0.5	0.24	20
04.09.2018	MES/A/5160	0.19	<0.5	<0.5	<0.5	0.06	21
14.09.2018	MES/A/5393	0.16	<0.5	<0.5	<0.5	0.13	21
15.09.2018	MES/A/5432	0.05	<0.5	<0.5	<0.5	0.18	20
21.09.2018	MES/A/5578	0.16	<0.5	<0.5	<0.5	0.16	21
22.09.2018	MES/A/5606	0.15	<0.5	<0.5	<0.5	0.05	20
24.09.2018	MES/A/5636	0.06	<0.5	<0.5	<0.5	0.13	23
25.09.2018	MES/A/5664	0.07	<0.5	<0.5	<0.5	0.05	21
Limits for Industrial , Residential, Rural and other Areas		1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr

Note : * Parameters monitored for period of 1 hr

(Signature)
(M.R.DURGA PRASAD)

(Signature)
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12-Q-1800013-TTC

Table No. 15

Analysis Report of Fugitive Emission

MESEL/A/Form/03/00

Name of the Project	: Dharmapura Iron Ore Mine (ML No.2543)		
Name of the Client	: M/s. V.N.K. Menon		
Station at & Code	: A - VI, Loading point		
Duration	: 8 Hrs		
Month	: September, 2018		
Date of Report	: 05.10.2018		
Date of sample	Report No	Particulate mater ($\mu\text{g}/\text{m}^3$)	
22.09.2018	MES/A/5604	357	
25.09.2018	MES/A/5662	258	

Station at & Code	: A - VII, Dumping point		
Duration	: 8 Hrs		
Month	: September, 2018		
Date of Report	: 05.10.2018		
Date of sample	Report No	Particulate mater ($\mu\text{g}/\text{m}^3$)	
21.09.2018	MES/A/5575	367	
24.09.2018	MES/A/5633	445	

Station at & Code	: A - VIII, Haulage Road		
Duration	: 8 Hrs		
Month	: September, 2018		
Date of Report	: 05.10.2018		
Date of sample	Report No	Particulate mater ($\mu\text{g}/\text{m}^3$)	
21.09.2018	MES/A/5576	384	
24.09.2018	MES/A/5634	421	
Ref : Environmental (Protection) Rules, 2010 (Sixth Amendment)			
Permissible limits for Fugitive Emissions		Particulate matter ($\mu\text{g}/\text{m}^3$)	
		1200 $\mu\text{g}/\text{m}^3$	


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ISO 9001:2015
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BS-OHSAS-18001-2007
12-Q-1800013-TTC

Table No. 16

STATISTICAL AMBIENT AIR QUALITY DATA

Name of the Project : Dharmapura Iron Ore Mine (ML No. 2543)									
Name of the Client : M/s. V.N.K. Menon									
Month : July to September, 2018									
Station Code : A I - Core Zone (Mine office)					A II - Dharmapura village				
	SO ₂	NO ₂	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	PM ₁₀	PM _{2.5}	
Min.	6	8	33	19	7	10	27	17	
10%	7	10	38	22	8	10	35	19	
25%	9	13	40	23	9	11	38	21	
50%	10	14	49	26	10	13	44	25	
75%	11	15	54	27	11	15	48	27	
98%	13	18	60	33	13	16	55	29	
Max.	13	18	63	35	13	16	55	29	
Avg.	10	14	48	26	10	13	43	24	
SD	2	3	8	4	2	2	8	4	
No. of obs	24				24				
Station Code : A III - Yeshwanthanagar					A - IV Ramgad				
	SO ₂	NO ₂	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	PM ₁₀	PM _{2.5}	
Min.	6	9	30	19	5	9	31	17	
10%	7	11	37	19	6	10	37	19	
25%	9	11	40	22	8	11	43	22	
50%	11	13	48	25	9	13	48	24	
75%	11	14	51	27	11	15	50	26	
98%	12	17	60	30	13	18	56	29	
Max.	12	18	63	31	13	18	56	29	
Avg.	10	13	46	24	9	13	46	24	
SD	2	2	8	3	2	2	7	3	
No. of obs	24				24				

M.R. Durga
(M.R. DURGA PRASAD)

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12-Q-1800013-TTC

Table No. 17

WATER ANALYSIS REPORT

MESEL/W/FORM/09/00

Name of the Project : M/s. V.N.K. Menon
Name of the Client : Dharmapura Iron Ore Mine (ML No. 2543)
Month : July, 2018
Date of sampling : 07.07.2018
Date of Report : 06.08.2018
Report No : MES/WR/635
Ref:IS : 2296, 1982 Class C Norms (Stream Water Standards)

Sl.No.	Parameters	Method of Testing	Limits For Stream Water Standards	Result	
				SW1	SW2
i	pH	IS:3025(Part-11)	6.5 to 8.5	7.63	7.13
ii	Dissolved Oxygen (as O ₂), mg/l, Min	IS:3025(Part-38)	4	5.2	5.5
iii	Biochemical Oxygen Demand (as O ₂), mg/l, Max	IS:3025(Part-44)	3	1.4	1.5
iv	Total Coliform (mpn/100ml), Max	IS:1622	5000	56	62
v	Colour (Hazen Units), Max	IS:3025(Part-4)	300	5	5
vi	Fluoride (as F), mg/l, Max	IS:3025(Part-60)	1.5	0.57	<0.1
vii	Cadmium (as Cd), mg/l, Max	IS:3025(Part-41)	0.01	<0.002	<0.002
viii	Chloride (as Cl), mg/l, Max	IS:3025(Part-32)	600	12.0	11.0
ix	Chromium (as Cr ⁺⁶), mg/l, Max	IS:3025(Part-52)	0.05	<0.03	<0.03
x	Cyanides (as CN), mg/l, Max	IS:3025(Part-27)	0.05	<0.01	<0.01
xi	Total Dissolved Solids (mg/l), Max	IS:3025(Part-16)	1500	180	104
xii	Selenium (as Se), mg/l, Max	IS:3025(Part-56)	0.05	<0.005	<0.005
xiii	Sulphates as SO ₄ (mg/l), Max	IS:3025(Part-24)	400	24.0	18.0
xiv	Lead (as Pb) mg/l, Max	IS:3025(Part-47)	0.1	<0.005	<0.005
xv	Copper (as Cu), mg/l, Max	IS:3025(Part-42)	1.5	<0.01	<0.01
xvi	Arsenic as As (mg/l), Max	IS:3025(Part-37)	0.2	<0.002	<0.002
xvii	Iron (as Fe), mg/l, MAX	IS:3025(Part-53)	50	0.08	0.07
xviii	Phenolic compounds (as C ₆ H ₅ OH), mg/l, Max	IS:3025(Part-43)	0.005	<0.001	<0.001
xix	Zinc (as Zn), mg/l, Max	IS:3025(Part-49)	15	<0.005	<0.005
xx	Insecticides, mg/l, Max	APHA 21 st	Absent	NA	NA
xxi	Anionic detergents (as MBAS), mg/l, Max	Annex K of IS 13248	1	<0.1	<0.1
xxii	Oil and grease, mg/l, Max	IS:3025(Part-39)	0.1	<0.01	<0.01
xxiii	Nitrates (as NO ₃), mg/l, Max	IS:3025(Part-34)	50	2.6	7.4
xxiv	Alpha Emitters (µcurie/ml), Max	APHA 21 st	10 ⁻⁹	NA	NA
xxv	Beta Emitters (µcurie/ml), Max	APHA 21 st	10 ⁻⁸	NA	NA

Note : NA - Not Analysed

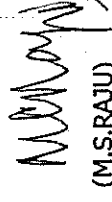
SAMPLE TYPE :
SW1 - Ragavapura kere water

SW2 - Dhananayakana kere water

Samples Collected & Analysed by Mineral Engineering Services, Ballari


(M.R. DURGA PRASAD)

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Table No.18

WATER ANALYSIS REPORT

MESEL/W/FORM/09/00

Name of the Project : M/s. V.N.K. Menon
Name of the Client : Dharmapura Iron Ore Mine (ML No. 2543)
Month : August, 2018
Date of sampling : 11.08.2018
Date of Report : 06.09.2018
Report No : MES/WR/652
Ref:IS : 2296, 1982 Class C Norms (Stream Water Standards)

Sl.No.	Parameters	Method of Testing	Limits For Stream Water Standards	Result	
				SW1	SW2
i	pH	IS:3025(Part-11)	6.5 to 8.5	8.34	8.40
ii	Dissolved Oxygen (as O ₂), mg/l, Min	IS:3025(Part-38)	4	5.2	5.4
iii	Biochemical Oxygen Demand (as O ₂), mg/l, Max	IS:3025(Part-44)	3	1.6	1.5
iv	Total Coliform (mpn/100ml), Max	IS:1622	5000	59	63
v	Colour (Hazen Units), Max	IS:3025(Part-4)	300	5	5
vi	Fluoride (as F), mg/l, Max	IS:3025(Part-60)	1.5	<0.1	<0.1
vii	Cadmium (as Cd), mg/l, Max	IS:3025(Part-41)	0.01	<0.002	<0.002
viii	Chloride (as Cl), mg/l, Max	IS:3025(Part-32)	600	15.0	17.0
ix	Chromium (as Cr ⁺⁶), mg/l, Max	IS:3025(Part-52)	0.05	<0.03	<0.03
x	Cyanides (as CN), mg/l, Max	IS:3025(Part-27)	0.05	<0.01	<0.01
xi	Total Dissolved Solids (mg/l), Max	IS:3025(Part-16)	1500	198	200
xii	Selenium (as Se), mg/l, Max	IS:3025(Part-56)	0.05	<0.005	<0.005
xiii	Sulphates as SO ₄ (mg/l), Max	IS:3025(Part-24)	400	8.6	8.6
xiv	Lead (as Pb) mg/l, Max	IS:3025(Part-47)	0.1	<0.005	<0.005
xv	Copper (as Cu), mg/l, Max	IS:3025(Part-42)	1.5	<0.01	<0.01
xvi	Arsenic as As (mg/l), Max	IS:3025(Part-37)	0.2	<0.002	<0.002
xvii	Iron (as Fe), mg/l, MAX	IS:3025(Part-53)	50	0.07	0.09
xviii	Phenolic compounds (as C ₆ H ₅ OH), mg/l, Max	IS:3025(Part-43)	0.005	<0.001	<0.001
xix	Zinc (as Zn), mg/l, Max	IS:3025(Part-49)	15	<0.005	<0.005
xx	Insecticides, mg/l, Max	APHA 21 st	Absent	NA	NA
xxi	Anionic detergents (as MBAS), mg/l, Max	Annex K of IS 13248	1	<0.1	<0.1
xxii	Oil and grease, mg/l, Max	IS:3025(Part-39)	0.1	<0.01	<0.01
xxiii	Nitrates (as NO ₃), mg/l, Max	IS:3025(Part-34)	50	3.8	3.9
xxiv	Alpha Emitters (ucurie/ml), Max	APHA 21 st	10 ⁻⁹	NA	NA
xxv	Beta Emitters (ucurie/ml), Max	APHA 21 st	10 ⁻³	NA	NA

Note : NA - Not Analysed

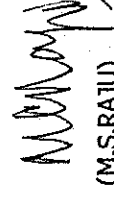
SAMPLE TYPE :

SW1 - Ragavapura kere water
SW2 - Dhananayakana kere water

Samples Collected & Analysed by Mineral Engineering Services, Ballari


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Table No. 19

WATER ANALYSIS REPORT

MESEL/WFORM/09/00

Name of the Project : M/s. V.N.K. Menon
Name of the Client : Dharmapura Iron Ore Mine (ML No. 2543)
Month : September, 2018
Date of sampling : 06.09.2018
Date of Report : 05.10.2018
Report No : MES/WR/662
Ref:IS : 2296, 1982 Class C Norms (Stream Water Standards)

Sl.No.	Parameters	Method of Testing	Limits For Stream Water Standards	Result	
				SW1	SW2
i	pH	IS:3025(Part-11)	6.5 to 8.5	8.05	7.76
ii	Dissolved Oxygen (as O ₂), mg/l, Min	IS:3025(Part-38)	4	5.4	5.4
iii	Biochemical Oxygen Demand (as O ₂), mg/l, Max	IS:3025(Part-44)	3	1.5	1.6
iv	Total Coliform (mpn/100ml), Max	IS:1622	5000	30	70
v	Colour (Hazen Units), Max	IS:3025(Part-4)	300	5	5
vi	Fluoride (as F), mg/l, Max	IS:3025(Part-60)	1.5	<0.1	<0.1
vii	Cadmium (as Cd), mg/l, Max	IS:3025(Part-41)	0.01	<0.002	<0.002
viii	Chloride (as Cl), mg/l, Max	IS:3025(Part-32)	600	27.0	5.0
ix	Chromium (as Cr ⁺⁶), mg/l, Max	IS:3025(Part-52)	0.05	<0.03	<0.03
x	Cyanides (as CN), mg/l, Max	IS:3025(Part-27)	0.05	<0.01	<0.01
xi	Total Dissolved Solids (mg/l), Max	IS:3025(Part-16)	1500	182	180
xii	Selenium (as Se), mg/l, Max	IS:3025(Part-56)	0.05	<0.005	<0.005
xiii	Sulphates as SO ₄ (mg/l), Max	IS:3025(Part-24)	400	6.4	6.8
xiv	Lead (as Pb) mg/l, Max	IS:3025(Part-47)	0.1	<0.005	<0.005
xv	Copper (as Cu), mg/l, Max	IS:3025(Part-42)	1.5	<0.01	<0.01
xvi	Arsenic as As (mg/l), Max	IS:3025(Part-37)	0.2	<0.002	<0.002
xvii	Iron (as Fe), mg/l, MAX	IS:3025(Part-53)	50	0.05	0.06
xviii	Phenolic compounds (as C ₆ H ₅ OH), mg/l, Max	IS:3025(Part-43)	0.005	<0.001	<0.001
xix	Zinc (as Zn), mg/l, Max	IS:3025(Part-49)	15	<0.005	<0.005
xx	Insecticides, mg/l, Max	APHA 21 st	Absent	NA	NA
xxi	Anionic detergents (as MBAS), mg/l, Max	Annex K of IS 13248	1	<0.1	<0.1
xxii	Oil and grease, mg/l, Max	IS:3025(Part-39)	0.1	<0.01	<0.01
xxiii	Nitrates (as NO ₃), mg/l, Max	IS:3025(Part-34)	50	3.7	3.4
xxiv	Alpha Emitters (µcurie/ml), Max	APHA 21 st	10 ⁻⁹	NA	NA
xxv	Beta Emitters (µcurie/ml), Max	APHA 21 st	10 ⁻⁹	NA	NA

SAMPLE TYPE :

SW1 - Ragavapura kere water

SW2 - Dhananayakana kere water

Samples Collected & Analysed by Mineral Engineering Services, Ballari

Note : NA - Not Analysed

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Table No. 20

WATER ANALYSIS REPORT

MESEL/W/FORM/10/00

Name of the Client : M/s. V.N.K. Menon
Name of the Project : Dharmapura Iron Ore Mine (ML No. 2543)
Month : July, 2018
Date of sampling : 07.07.2018
Date of Report : 06.08.2018
Report No : MES/MWR/0646
Ref : IS:10500-2012 Norms (Drinking Water Standards)

Sl.	Parameters	Method of Testing	Desirable	Permissible	Result	
					GW1	GW2
i	Colour (Hazen Units), Max	IS:3025 (Part-4)	5	15	<1	1
ii	Odour	IS:3025 (Part-5)	Agreeable	Agreeable	Agreeable	Agreeable
iii	pH	IS:3025 (Part-11)	6.5 to 8.5	6.5 - 8.5	6.97	7.40
iv	Taste	IS:3025 (Part-8)	Agreeable	Agreeable	Agreeable	Agreeable
v	Turbidity, NTU, Max	IS:3025 (Part-10)	1	5	1.3	0.5
vi	Total Dissolved Solids, mg/l, Max	IS:3025 (Part-16)	500	2000	20	700
vii	Aluminium (as Al), Max	IS:3025 (Part-55)	0.03	0.2	<0.01	<0.01
viii	Ammonia (as total Ammonia-N), mg/l, Max	IS:3025 (Part-34)	0.5	0.5	<0.1	<0.1
ix	Anionic Detergents (as MBAS), mg/l, Max	Annex K of IS:13428	0.2	1.0	<0.1	<0.1
x	Barium (as Ba), mg/l, Max	IS:15302 & APHA 21 st	0.7	0.7	<0.05	<0.05
xi	Boron (as B), mg/l, Max	IS:3025 (Part-57)	0.5	1	<0.1	<0.1
xii	Calcium (as Ca), mg/l, Max	IS:3025 (Part-40)	75	200	2	120
xiii	Chloramines (as Cl ₂), mg/l, Max	APHA 21 st	4.0	4.0	NA	NA
xiv	Chloride as Cl (mg/l), mg/l, Max	IS:3025 (Part-32)	250	1000	10	147
xv	Copper (as Cu), mg/l, Max	IS:3025 (Part-42)	0.05	1.5	<0.01	<0.01
xvi	Fluoride (as F), mg/l, Max	IS:3025 (Part-60)	1	1.5	<0.1	0.24
xvii	Residual, Free Chlorine, mg/l, Max	IS:3025 (Part-26)	0.2	1	<0.1	<0.1
xviii	Iron (as Fe), mg/l, Max	IS:3025 (Part-53)	1.0	1.0	0.05	0.07
xix	Magnesium (as Mg), mg/l, Max	IS:3025 (Part-46)	30	100	1.0	52.3
xx	Manganese (as Mn), mg/l, Max	IS:3025 (Part-59)	0.1	0.3	<0.03	<0.03
xxi	Mineral Oil, mg/l, Max	Clause 6 of IS 3025 (part-39)	0.5	0.5	<0.01	<0.01
xxii	Nitrates (as NO ₃), mg/l, Max	IS:3025 (Part-34)	45	45	<0.1	0.8
xxiii	Phenolics (as C ₆ H ₅ OH), mg/l, Max	IS:3025 (Part-43)	0.001	0.002	<0.001	<0.001
xxiv	Selenium (as Se), mg/l, Max	IS:3025 (Part-56)	0.01	0.01	<0.005	<0.005
xxv	Silver (as Ag), mg/l, Max	Annex J of IS:13428	0.1	0.1	<0.002	<0.002
xxvi	Sulphates (as SO ₄), mg/l, Max	IS:3025 (Part-24)	200	400	<1	120.0
xxvii	Sulphide (as H ₂ S), mg/l, Max	IS:3025 (Part-29)	0.05	0.05	<0.01	<0.01
xxviii	Alkalinity (as CaCO ₃), mg/l, Max	IS:3025 (Part-23)	200	600	6	370
xxix	Total Hardness (as CaCO ₃), mg/l, Max	IS:3025 (Part-21)	200	600	10	515
xxx	Zinc (as Zn), mg/l, Max	IS:3025 (Part-49)	5	15	<0.005	<0.005
xxxi	Cadmium (as Cd), mg/l, Max	IS:3025 (Part-41)	0.003	0.003	<0.002	<0.002
xxxii	Cyanide (as CN), mg/l, Max	IS:3025 (Part-27)	0.05	0.05	<0.01	<0.01
xxxiii	Lead (as Pb), mg/l, Max	IS:3025 (Part-47)	0.01	0.01	<0.005	<0.005
xxxiv	Molybdenum (as Mo), mg/l, Max	APHA 21 st	0.07	0.07	NA	NA
xxxv	Mercury (as Hg), mg/l, Max	IS:3025 (Part-48)	0.001	0.001	<0.0005	<0.0005
xxxvi	Nickel (as Ni), mg/l, Max	IS:3025 (Part-54)	0.02	0.02	<0.01	<0.01
xxxvii	Pesticides (Total)	APHA 21 st	Absent	0.001	NA	NA
xxxviii	Polychlorinated biphenyls, mg/l, Max	APHA 21 st Edition	0.0005	0.0005	NA	NA
xxxix	Polynuclear Aromatic Hydrocarbons (as PAH), mg/l, Max	APHA 21 st Edition	0.0001	0.0001	NA	NA
XL	Arsenic (as As), mg/l, Max	IS:3025 (Part-37)	0.01	0.01	<0.002	<0.002
XLI	Chromium (as Cr ⁶⁺), mg/l, Max	IS:3025 (Part-52)	0.05	0.05	<0.03	<0.03
XLii	Trihalomethanes, mg/l, Max	APHA 21 st	--	--	NA	NA
XLiii	Radioactive materials, Bq/l, mg/l	APHA 21 st	--	--	NA	NA
XLiv	Total Coliform (/100ml)	IS:1622	Absent	Absent	Absent	Absent
XLv	E-Coli (cfu/100ml)	IS:1622	Absent	Absent	Absent	Absent
SAMPLE CODE : GW1 -Drinking Near Mine Office			GW2 -Dharmapura Bore water			
Samples Collected & Analysed by Mineral Engineering Services, Ballari			NA - Not Analysed			

(Signature)
(M.R.DURGA PRISAD)

GOVT. ANALYST

(Signature)
(M.S.RAJU)

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MINERAL ENGINEERING SERVICES



(Recognised by GOI, MoEF&CC under E(P) Act 1986 Vide Gazette Notification No.SO 857(E) dated 26.02.2018. Recognition valid upto 25.02.2023
ISO 9001 : 2015 AND BS OHSAS 18001: 2007 Certification Valid upto 18.03.2021

Table No. 21

WATER ANALYSIS REPORT

MESELW/FORM/10/00

Name of the Client : M/s. V.N.K. Menon
Name of the Project : Dharmapura Iron Ore Mine (ML No. 2543)
Month : July, 2018
Date of sampling : 07.07.2018
Date of Report : 06.08.2018
Report No : MES/WR/0646
Ref : IS:10500-2012 Norms (Drinking Water Standards)

Sl. No.	Parameters	Method of Testing	Desirable Limits	Permissible Limits	Result
i	Colour (Hazen Units), Max	IS:3025 (Part-4)	5	15	GW4 1 <1
ii	Odour	IS:3025 (Part-5)	Agreeable	Agreeable	Agreeable
iii	pH	IS:3025 (Part-11)	6.5 to 8.5	6.5 - 8.5	7.80 6.35
iv	Taste	IS:3025 (Part-8)	Agreeable	Agreeable	Agreeable
v	Turbidity, NTU, Max	IS:3025 (Part-10)	1	5	1.6 2.0
vi	Total Dissolved Solids, mg/l, Max	IS:3025 (Part-16)	500	2000	1240 188
vii	Aluminium (as Al), Max	IS:3025 (Part-55)	0.03	0.2	<0.01 <0.1
viii	Ammonia (as total Ammonia -N), mg/l, Max	IS:3025 (Part-34)	0.5	0.5	<0.1 <0.1
ix	Anionic Detergents (as MBAS), mg/l, Max	Annex K of IS:13428	0.2	1.0	<0.1 <0.05
x	Barium (as Ba), mg/l, Max	IS:15302 & APHA 21 st	0.7	0.7	<0.05 <0.1
xi	Boron (as B), mg/l, Max	IS:3025 (Part-57)	0.5	1	<0.1 <0.1
xii	Calcium (as Ca), mg/l, Max	IS:3025 (Part-40)	75	200	152 42
xiii	Chloramines (as Cl ₂), mg/l, Max	APHA 21 st	4.0	4.0	NA NA
xiv	Chloride as Cl (mg/l), mg/l, Max	IS:3025 (Part-32)	250	1000	360 32
xv	Copper (as Cu), mg/l, Max	IS:3025 (Part-42)	0.05	1.5	<0.01 <0.01
xvi	Fluoride (as F), mg/l, Max	IS:3025 (Part-60)	1	1.5	0.19 0.72
xvii	Residual, Free Chlorine, mg/l, Max	IS:3025 (Part-26)	0.2	1	<0.1 <0.1
xviii	Iron (as Fe), mg/l, Max	IS:3025 (Part-53)	1.0	1.0	0.05 0.05
xix	Magnesium (as Mg), mg/l, Max	IS:3025 (Part-46)	30	100	83.0 16.0
xx	Manganese (as Mn), mg/l, Max	IS:3025 (Part-59)	0.1	0.3	<0.03 <0.03
xxi	Mineral Oil, mg/l, Max	Clause 6 of IS 3025 (part -39)	0.5	0.5	<0.01 <0.01
xxii	Nitrates (as NO ₃), mg/l, Max	IS:3025 (Part-34)	45	45	105.0 24.0
xxiii	Phenolics (as C ₆ H ₅ OH), mg/l, Max	IS:3025 (Part-43)	0.001	0.002	<0.001 <0.001
xxiv	Selenium (as Se), mg/l, Max	IS:3025 (Part-56)	0.01	0.01	<0.005 <0.005
xxv	Silver (as Ag), mg/l, Max	Annex J of IS:13428	0.1	0.1	<0.002 <0.002
xxvi	Sulphates (as SO ₄), mg/l, Max	IS:3025 (Part-24)	200	400	73.0 18.0
xxvii	Sulphide (as H ₂ S), mg/l, Max	IS:3025 (Part-29)	0.05	0.05	<0.01 <0.01
xxviii	Alkalinity (as CaCO ₃), mg/l, Max	IS:3025 (Part-23)	200	600	480 88
xxix	Total Hardness (as CaCO ₃), mg/l, Max	IS:3025 (Part-21)	200	600	720 150
xxx	Zinc (as Zn), mg/l, Max	IS:3025 (Part-49)	5	15	<0.005 <0.005
xxxi	Cadmium (as Cd), mg/l, Max	IS:3025 (Part-41)	0.003	0.003	<0.002 <0.002
xxxii	Cyanide (as CN), mg/l, Max	IS:3025 (Part-27)	0.05	0.05	<0.01 <0.01
xxxiii	Lead (as Pb), mg/l, Max	IS:3025 (Part-47)	0.01	0.01	<0.005 <0.005
xxxiv	Molybdenum (as Mo), mg/l, Max	APHA 21 st	0.07	0.07	NA NA
xxxv	Mercury (as Hg), mg/l, Max	IS:3025 (Part-48)	0.001	0.001	<0.0005 <0.0005
xxxvi	Nickel (as Ni), mg/l, Max	IS:3025 (Part-54)	0.02	0.02	<0.01 <0.01
xxxvii	Pesticides (Total)	APHA 21 st	Absent	0.001	NA NA
xxxviii	Polychlorinated biphenyls mg/l, Max	APHA 21 st Edition	0.0005	0.0005	NA NA
xxxix	Polynuclear Aromatic Hydrocarbons (as PAH), mg/l, Max	APHA 21 st Edition	0.0001	0.0001	NA NA
XL	Arsenic (as As), mg/l, Max	IS:3025 (Part-37)	0.01	0.01	<0.002 <0.002
XLI	Chromium (as Cr ⁶⁺), mg/l, Max	IS:3025 (Part-52)	0.05	0.05	<0.03 <0.03
XLii	Trihalomethanes, mg/l, Max	APHA 21 st	—	—	NA NA
XLiii	Radioactive materials, Bq/l, mg/l	APHA 21 st	—	—	NA NA
XLiv	Total Coliform (100ml)	IS:1622	Absent	Absent	Absent Absent
XLv	E-Coli (cfu/100ml)	IS:1622	Absent	Absent	Absent Absent
SAMPLE CODE : GW3 - Yeshwanthanagar Bore water			GW4 - Tayamimakolla Bore water		
Samples Collected & Analysed by Mineral Engineering Services, Ballari			NA - Not Analysed		

M.R. Durga
(M.R. DURGA PRASAD)

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ISO 9001-2015
12-Q-1800012-TTC
BS-OHSAS-18001-2007
12-Q-1800013-TTC

Table No. 22

NOISE LEVEL DATA

MESELN/FORM/02/00

Name of the Client		: M/s. V.N.K. Menon					
Name of the Project		: Dharmapura Iron Ore Mine (ML No. 2543)					
Date of monitoring		: 20.07.2018					
Date of Report		: 06.08.2018					
Report No		: MES/NS/0180					
Code	Monitoring stations		Day		Night		
No.	L _{min}	L _{eq}	L _{max}	L _{min}	L _{eq}	L _{max}	
Bufferzone							
N1	Dharmapura	38.0	48.2	55.3	36.0	40.7	
N2	Yeshwanthanagar	36.0	45.1	56.3	34.0	41.3	
N3	Ramgad village	37.0	50.1	56.0	34.0	44.0	
Corezone							
N4	Core zone Near Mines office	37.0	49.5	58.3	34.0	38.0	
Permissible Limits of Ambient Noise Levels as per CPCB Guidelines Leq. Limit dB(A) Day Night Industrial areas 75 70 Commercial area 65 55 Residential area 55 45							

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