

**Job No.750001**

**ANNUAL ENVIRONMENTAL  
MONITORING 2019-2020**

**IB VALLEY  
M/s MAHANADI COALFIELDS LTD.**  
*(A Subsidiary of Coal India Ltd.)*

Jagruti Vihar, Burla, Sambalpur-768020



**CENTRAL MINE PLANNING  
& DESIGN INSTITUTE LTD.**

**RI VII, BHUBANESWAR  
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## 1. INTRODUCTION

### 1.1 IB VALLEY COALFIELD

The state of Odisha is one of the top mineral rich states of the country where development of mining industry holds great promise for the growth of the state, country and its people. The state is endowed with a variety of mineral resources, coal being a major one. It has two important coalfields of the country, namely Talcher and Ib-valley coalfield.

Ib-valley coalfield is located between latitudes 21°31' & 22°14'N and longitudes 83°32' & 84°10'E within the districts of Sundergarh, Jharsuguda and Sambalpur and covers an area of about 1460 Sq. Kms. The coalfield is named after the river Ib, a tributary of river Mahanadi, which passes through the eastern fringe of the coalfield.

The headquarters of Mahanadi Coalfields Limited is located at Burla near Sambalpur town, Odisha.

Ib valley coalfield which comprises south-eastern most part of NW-SE trending Son-Mahanadi valley of Gondwana basin forms a half elliptical basin with a linear NW-SE trend. The trend of this synclinal Gondwana basin bears close parallelism to the structural configuration of the basement pre-cambrian rocks. The basin is closed towards southeast and open towards north-west. The basin has normal depositional contact with the metamorphics in the north-eastern, eastern and south-eastern part. However, its contact is faulted in the south-western boundary where younger formations viz. Raniganj and Barren measures occur in juxtaposition with the metamorphics. The coalfield is connected with Mand-Raigarh coalfield by Barakars, Barren Measures, Raniganj and Kamthis. The coalfield is also connected with Talcher coalfield by a thin narrow strip of Talcher formation. The boundary between Mand-Raigarh and Ib Valley coalfield is administrative boundary of Odisha and Chhatisgarh states.

Barakar and Karharbari are the two potential coal bearing formations in Ib Valley coalfield, Barakar formation is the store house of majority of coal seams. The potential coal bearing area (excluding Kamthis, non coal bearing Lower Karharbari Formation) of the coalfield is about 1000 sq. km stretching along the south, east and northern periphery of the coalfield. Based on exploration carried out in the coalfield, five coal horizons viz. Ib, Rampur, Lajkura, Parkhani and Belpahar have been identified in ascending order. Most of the coal seams are splitted into 2 to 7 sections.

The coal seams have been explored in detail along the southern part of the coalfield as well as the eastern part and to a great extent in the northern periphery of the basin. Thus occurrence of coal seams in this part of the coalfield is well established.

**Table 01**  
**Coal Reserves in Ib-valley coalfield as on 1.4.2019**  
**(Reserves in million tonnes)**

Depth (in meter)	Proved reserves	Indicated reserves	Inferred reserves	Total reserves
<b>0-300</b>	12287.21	5055.30	-	17342.51
<b>300-600</b>	2908.54	4522.11	3610.53	11041.18
<b>600-1200</b>	0.97	1235.01	-	1235.98
<b>Total</b>	<b>15196.72</b>	<b>10812.42</b>	<b>3610.53</b>	<b>29619.67</b>

Source CMPDI website, as on 01.04.2019

## 1.2 HISTORY OF EXPLORATION

This coalfield was discovered in the latter half of the 19th century and was explored in 1871-75 by V. Baul of Geological Survey of India. Some work was also carried out by W. King during 1884-86.

Systematic geological mapping was carried out during 1954-55 by S/S D.R.S. Mehta & Anandalwar. S/S B. C. Pande and S. N. Chakravorty were involved in 1961-63 for detailed mapping of southern part of the coalfield.

The dip side area in the existing Rampur colliery was undertaken for field exploration to establish various parameters of coal seams/sections by the Dept. of Mining & Geology, Govt. of Orissa at the instance of CMPDI in December 1977.

While proving Rampur and Ib horizons the overlying Lajkura horizon was intersected in certain boreholes in the Rampur lease hold area. The exploration thereafter was intensified in the south eastern part of the coalfield (i. e Rampur tract).

However, in the west-central & north-western part (i.e Hingir and Gopalpur tract) regional exploration by GSI was started in 1980. Subsequently detailed exploration in Gopalpur tract was commenced in 1984 and is continuing at present.

### 1.3 MINING AREA

List of approved projects with sanctioned Environmental Clearance of Ib Coalfield is as follows:

**Table 02**

SNo.	Name of Project	Approved EC (MTY) and Date
1	Lajkura OCP	4.5 (30-01-15)
2	Samaleswari OCP	15.00 (26-12-19)
3	Belpahar OCP	9.00 (22-01-15)
4	Lakhanpur OCP	21.00 (10-01-20)
5	Lilari OCP	0.8 (30-06-90)
6	Basundhara (W) OCP	8.0 (25-02-13)
7	Kulda OCP	14.00 (10-01-20)
8	Garjanbahal OCP	13.00 (9-11-17)
9	Siarmal OCP	Under process
10	Orient mine 1 & 2	0.87 (26-02-13)
11	Orient mine no. 3	0.69 (12-03-13)
12	Orient mine no. 4	0.5 (25-02-13)
13	Hirakhand Bundia Incl.	0.95 (26-02-13)
14	Basundhara (W) Extn. OCP	Under process

### 1.4 COMMUNICATION

The south-eastern part of the coalfield (i.e. Rampur tract) where all the present coal mining activities are confined is situated alongside the main Howrah-Mumbai railway line of SEC Railways. The nearest rail head on this railway line is Brajrajnagar, which is situated at the focal point of the operative mines. The district headquarters township of Jharsuguda is about 14 kms away from the coalfield and is also connected by road.

The central and north-western part (i.e. Gopalpur tract) is communicable by all weathered black top road connecting Sundargarh of Odisha with Raigarh in Chhattisgarh. The distance from Sundargarh is about 42 km. The nearest railhead is Hingir on Mumbai-Howrah Railway line, about 30 to 35 km connected by black top road. Jharsuguda railway station on Jharsuguda-sambalpur-Bhubaneswar rail line of East coast railway is at a distance of about 75 km from this Gopalpur tract. The Jharsuguda airport is the nearest airport from the coalfield.

Railway line connecting Talcher with Sambalpur/Jharsuguda has been constructed and commissioned in August 1998.

## 1.5 TOPOGRAPHY AND DRAINAGE

The coalfield has been divided in three sectors.

The coalfield area is represented by low irregular upland of undulating topography and broadly can be divided into three different units:

- i) Rugged topography -represented by hard metamorphic rocks all along the boundaries of the coalfield in the north, east and south.
- ii) Low irregular plain country of rolling topography -represented by the rocks of Barakar formations.
- iii) Hilly rough terrain -represented by the rocks of Kamthi formation including Barren measures and Raniganj formations.

The altitude of the coalfield varies widely from less than 200m to more than 600m above MSL (mean sea level). The general altitude however, varies between 200m and 350m. A series of low parallel ridges of sandstone interspaced with valleys of shales & coal seams are the characteristics of coal bearing Barakar formations.

The drainage system of the coalfield is controlled by Ib river, a tributary of river Mahanadi. Ib river flows from north to south and discharges in Hirakud reservoir in the south-eastern fringe of the coalfield beyond the mining areas. The Bhedan river, Lilari, Basundhara, Lamtibahal, Chelduthi and Chaturdhara nallas discharge into the river Ib and provide drainage system within the coalfield.

## 1.6 CLIMATE AND RAINFALL

The area experiences typical warm to hot tropical climate with temperature varying from 9°C to 49°C. Average humidity varies from 26% to 83%. Generally the humidity is highest in August and least in March. Annual mean wind velocity is 7 Km/hr. with maximum speed of more than 20 Km/hr.

Annual mean rainfall per annum is 1477.6 mm. Maximum rainfall during August is around 422 mm and minimum is around 229 mm in June as Observed Rainfall Variability and Changes Over Odisha State Report 2020, IMD

**1.7 LIST OF ENVIRONMENTAL QUALITY MONITORING STATIONS****Table 03: Air Monitoring Station**

SNo.	Area	Project	Air Monitoring Station
1	Ib Valley	Samleswari	Roof of Project Office, SOCP
2			Near Re-Joice Club in Hill Top Colony
3			Near Kudopali
4			Lajkura Village
5		Jamkani Village	
6		Lajkura	Near Project Office
7			Near South Coal Stock
8			Near Adarsh Nagar Colony (Reported Only)
9	Lakhanpur	Lilari	South East of Mine
10		Lakhanpur	South of Quarry 5
11			Near Quarry 3
12			West of Quarry 1
13		Near East of Quarry 1	
14		Belpahar	South West of Mine
15			Near Quarry 5
16			Near PO Office
17			Near Workshop
18		Basundhara-Garjanbahal	Kulda
19	KUL2 - West of Working Face/Near Tumulia		
20	KUL 3-South of Working Face/Near Karlikachhar		
21	KUL 4 - North of CHP/Kushra		
22	Garjanbahal OCP		GOCP 1- Kushra (Reported Only)
23			GOCP 2 - Karlikachhar (Reported Only)
24			GOCP 3 - 220 kV Substation
25			GOCP 4 - Barpali (Reported Only)
26			GOCP 5 - Duduka Village
27	Basundhara (W), OCP		KAN 1- Near Coal Sampling Lab
28			A1-Near Internal Dump & CT Road of Basundhara (W) OCP/Siarmal
29			A2-Near Internal Dump & CT Road of Basundhara (W) OCP/Gopalpur
30			A3-Near Sardega Railway Siding
31			A4-Sardega Siding and Coal Stocks
32		A5-Near Coal Stock of Basundhara (W) OCP	
33	Orient	Orient Mine no. 2	Orient Mine No.2
34			Near Adarsh Nagar Colony
35		Orient Mine no. 3	Orient Mine No. 3
36		Orient Mine no. 4	Orient Mine No. 4
37		HBI Mine	HBI Mine
	Bundia Colony Pump House		
			Rampur Officers Guest House



**Table 04: Noise monitoring stations**

Sl. No.	Area	OCP/Project	Noise Monitoring stations	
1	Ib valley	Samaleswari	Roof of Project Office, SOCP	
2			Near Re-Joice Club in Hill Top Colony	
3			Near Kudopali	
4			Lajkura Village	
5			Jamkani Village	
6		Lajkura	Near Project Office	
7			Near Adarsh Nagar Colony (Reported Only)	
8			Chhualiberna	
9	Lakhanpur	Lilari	South East of Mine	
10		Lakhanpur	South of Quarry 5	
11			Near Quarry 3	
12			West of Quarry 1	
13			Near East of Quarry 1	
14		Belpahar	South West of Mine	
15			Near Quarry 5	
16			Near PO Office	
17			Near Workshop	
18			Basundhara-Garjanbahal	Basundhara(W)
19	NL2- CHP CT Road			
20	NL3- Internal Dump, CT Road			
21	NL4- Sardega Siding and Coal Stocks			
22	Garjanbahal OCP	N1-Karlikachar Village		
23		N2- Barpali Village		
24	Kulda	N1- West of Working Face/near Tumulia		
25		NL2-North of CHP/Kushra		
26	Orient	Orient No. 2	Orient Mine no.2	
27			Near Adarsh nagar colony	
28		Orient No. 3	Orient Mine no. 3	
29		Orient No. 4	Orient Mine no. 4	
30		HBI Mine	HBI Mine	
31			Bundia Colony Pump House	
32			Rampur Officers Guest House	

**Table 05: Effluent Monitoring Stations**

Sl. No.	Area	OCP	4 Parameter (pH, TSS, O&G and COD) Monitoring Stations
1	IB-valley	Samaleswari	Outlet of Sedimentation Pond (MDTP)
2			O&G Trap Outlet
3		Lajkura	Inlet of Oil & Grease Trap
4			Outlet of Oil & Grease Trap
5			u/s of Baghmara Nala at Discharge Point
6			d/s of Baghmara Nala at Discharge Point
7			Inlet of MDTP
8			Outlet of MDTP
9			Treated Water from STP
10		Central hospital	Outlet of drain (6P)
11	Lakhanpur	Lilari	Mine Sump Water
12		Lakhanpur	Outlet of Sedimentation Pond
13			O & G Trap Outlet
14			Mine Sump Water
15		Belpahar	Outlet of ETP
16			Mine Sump Water
17			ECO Tank
18	Basundhara-Garjanbahal	Kulda	Mine Sump Water
19			Final Discharge Point of Mine
20		Garjanbahal	Mine Sump Water
21			Outlet of Settling Pond
22		Basundhara (W)	Inlet of Settling Pond at Excavation Workshop
23			Outlet of Settling Pond at Excavation Workshop
24	Basundhara (E) OCP's Sump		
25	Orient	Orient Mine No. -2	Mine sump of Mine-2
26		Orient Mine No. -3	Mine sump of Mine-3
27		Orient Mine No. -4	Mine sump of Mine-4
28		HBI Mine	Mine Sump of HBM
<b>Sl. No.</b>	<b>Area</b>	<b>OCP</b>	<b>3 Parameter (p H, TSS, BOD) STATIONS</b>
1	IB-valley	Samaleswari	DETP/STP outlet
2		Lajkura	Treated Water from STP
<b>Sl. No.</b>	<b>Area</b>	<b>OCP</b>	<b>1 Parameter (p H) NAME OF STATIONS</b>
1	IB-valley	Samaleswari	Mine Sump Water
2		Lajkura	Mine sump water

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Sl. No.	Area	OCP	22 Parameter NAME OF STATIONS
1	IB-valley	Samaleswari	Outlet from Sedimentation Pond
2		Lajkura	Outlet of MDTP
3	Lakh anpur	Lakhanpur	Mine Sump Water
4		Belpahar	Mine Sump Water
5	Basu ndhar a- Garja	Kulda	Mine Sump Water
6			Final discharge Point of Mine
7	Orient	Orient Mine No. -2	Mine sump of Mine no.2
8		Orient Mine No. -3	Mine sump of Mine no.3
9		Orient Mine No. -4	Mine sump of Mine no.4
10		HBI Mine	Mine Sump of HBM



*cmpdi*  
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**Table 06: Drinking Water level Monitoring Stations**

Sl. No.	Area	OCP / UG	STATION NAMES
1	IB-valley	Samaleswari	Well Water from Chingriguda
2			Well Water from Kudopali
3			Well Water from Lajkura
4			Well Water Ainlapali
5			Tap Water from Samleswari OCP Colony
6			Water from IWSS, IB Valley Area
7		Lajkura	Madhuban Nagar Well Water
8			Adarsh Nagar Colony Well Water
9			Chhualiberna Village Well Water
10			Adarsh Nagar Tap Water
11	Lakhanpur	Lilari	Jurabaga Village Well Water
12		Lakhanpur	LKP Canteen Tap Water
13		Belpahar	IWSS Outlet
14	Basundhara-Garjanbahal	Kulda	Well at Tumulia
15			Filter Plant
16		Garhanbahal	Well at Garjanbahal Village
17		Well at Karlikachar	
18	Basundhara	Basundhra Colony Tap Water	
19	Orient	Orient Mine no. 2	Tap Water at Budhijaam colony
20			Mine no 1&2 filter plant
21		Orient Mine no. 3	Mine no 3 filter plant
22		HBI Mine	Tap Water at Rampur Colony
23			HBI Filter Plant
24	MCL(HQ)	MCL(HQ)	Tap Water at DAV School (Anand Vihar)
25			Tap Water at Cooperate Office (Jagruthi Vihar)
26			Inlet to Water Treatment Plant (Anand Vihar)
27			Outlet of Water Treatment Plant (Anand Vihar)

**Table 07: Surface Water Monitoring Stations**

Sl. No..	OCP / UG	NAME OF THE STATION
1	<b>Samaleswari</b>	Pandren Nallah Near Muchabahal
2		Pandren Nallah Before Confluence Point with Lilari Nallah
3	<b>Lakhanpur</b>	Pulijhor Stream Near Tingismal Village as u/s for Lakhanpur OCP
4		Pulijhor stream Near Darlipalil Village before Confluence to Lilari Nallah as d/s Water of Lakhanpur OCP
5		Lilari Nallah Near Kudaloi Village as u/s of Lakhanpur OCP
6		Lilari Nallah Near Project Office Lilari Bridge Village as d/s of Lakhanpur OCP
19	<b>Kulda</b>	Basundhara River near Kusara Village as d/s Water of Kulda OCP
20		Basundhara river near Kulaparha Village just after meeting point of Basundhara and chhaturdhara River as u/s of Kulda OCP
		Basundhara River near Tiklipara Village as d/s of Kulda OCP
19	<b>Garjanbahal</b>	Basundhara River near Bankibahal Bridge as u/s water of Garjanbahal OCP
21		Basundhara River near Barpali Village as u/s of Garjanbahal OCP
11	<b>Orient Mine no. 2</b>	Bhedan River Before Confluence Point with IB River
12	<b>Orient Mine no. 3</b>	Pond Water at Burhijam Village
13	<b>Orient no. 4</b>	IB River Near Charbhati Village as u/s water for Ib Valley Coalfield
14	<b>Orient no. 5</b>	Basundhara River Near Degan Village Before Confluence as u/s of Orient Area
15	<b>Orient no. 6</b>	IB River Bridge of NH200 at Gondghora Village as u/s of Orient Area
16	<b>Orient no. 7</b>	Bagachoppa Jhor Gangapur Village as u/s for Rampur Colliery
17	<b>HBI</b>	IB River near Kotarbaga Village at Bridge Point

**Table 08: Well Water Monitoring Stations**

Sl. No.	Area	OCP	Name of station
1	Ib valley	Samleswar i	Well of Chingriguda
2			Well of Kudopali
3			Well of Lajkura
4			Well of Ainlapali
5		Lajkura	Madhuban Nagar Well Water
6			Adarsh Nagar Colony Well Water
7			Chhualiberna Village Well Water
8	Lakhanpur	Lakhanpur	Ubuda Village Well
9			Khairkuni Village Well
10			Darlipali Village Well Water
11		Belpahar	Chharla Village Well
12	Basundhara-Garjanbahal	Kulda	Well of Tumulia
13			Well at Kulda
14		Garjanbahal	Well at Garjanbahal Village
15			Well at Karlikachar Village
16		Basundhara	Sardega Village Well
17	Tiklipara village Well		
18	Orient	Orient Mine no. 2	Madhuban Nagar Village Well
19			Chhualiberna Village Well Water (Repeated)
20		Orient Mine no. 3	Well of Chingriguda (Repeated)
21			Well of Kudopali (Repeated)
22			Well of Lajkura (Repeated)
23			Well of Ainlapali (Repeated)
24		Orient Mine No. 4	Adibasi Basti Village Well
25			Jhopadi Basti Village Well
26		HBI	Well of Chingriguda (Repeated)
27			Well of Kudopali (Repeated)
28	Well of Lajkura (Repeated)		
29	Well of Ainlapali (Repeated)		

**Table 09: TSS Monitoring Stations**

Sl. No.	Area	OCP/Project	Name of the station
1	IB-Valley	Lajkura	Mine Sump
2			Surface Pond
3	Basundhara - Garjanbahal	Basundhara (W)	100 m upstream of the point in Basundhara nalla near Sardega Village
4			100 m downstream of the point in Basundhara nalla near Sardega Village

**Table 10: Piezometer Monitoring Stations**

Sl. No.	Area	OCP	Name of station	Location of the Station	
1	Ib valley	Samleswari	Piezometer No MIP 04:	Village Kutabaga; (Believer's church school)	
2		Lajkura	Piezometer No MIP 02 :	Village Gumadera; Village high school	
3	Lakhanpur	Lilari	Piezometer No MIP 06:	Infront of Lilari mines Project office.	
4			Piezometer No MIP 09:	Village Junion; Inside the premisses of State Govt. Horticulture Institute.	
5			Piezometer No MIP 10: .	Village Dahaldera; Inside the premisses of UP school.	
6		Belpahar	Piezometer No MIP 07 :	Infront of DAV school Bandbahal, Inside colony substation.	
7			Piezometer No MIP 08:	Village Kusraloi, Inside the premisses of Prathamik Vidyalaya	
8		Basundhara	Kulda	Piezometer No MIP 12 :	Village Balinga; MCL office.
9				Piezometer No MIP 14 :	Village Kulda; Primary school campus.
10			Piezometer No MIP 01:	Village Garjanbahal (village school campus)	
11			Piezometer No MIP 11 :	Village Karlikachar; Infront of Primary school.	
12	Basundhara		Piezometer No MIP 15:	Back side of Sardega Primary school.	
13			Piezometer No MIP 16:	Village Kulhparha (new basti) on the road from Sardega to Gopalpur.	
14			Piezometer No MIP 13 :	Village Tumlia; Inside the campus of Manikeswari College.	
15		Piezometer No MIP 17:	Village Gopalpur; CMPDI Exploration camp.		
16	Orient	Orient	Piezometer No MIP 03 :	Beside Ib valley GM house.	
17			Piezometer No MIP 05:	Village Chauliberna; Inside Narsing High school campus	

## 2. FREQUENCY OF MONITORING

**Table 11: Frequency of Monitoring**

Sl. No.	Parameters	Sampling Frequency
1.	Air (5 Parameter) Quality Monitoring	Fortnightly
2.	Noise level (Day & Night) Monitoring	Fortnightly
3.	Effluent (1 Parameter) Quality Monitoring	Quarterly
4.	Effluent (4 & 3 Parameter) Quality Monitoring	Fortnightly/Monthly/ Quarterly
5.	Effluent (22 Parameter) Quality Monitoring	Yearly
6.	Drinking Water(26 Parameter) Quality Monitoring	Monthly
7.	Piezometer& Ground Water Level Monitoring	Quarterly
8.	Surface Water (21 Parameter) Quality Monitoring	Quarterly
9.	TSS Monitoring	Monthly





### 3. METHODOLOGY & INSTRUMENTS USED

**Table 12: Methodology & Instruments used for Air Quality Analysis**

SNo.	Parameters	Method	Instruments
1.	SPM and PM <sub>10</sub>	IS:5182 (Part-23):2006 Cyclonic Flow Technique, Gravimetric Method	Respirable Dust Sampler, Electronic Balance
2.	PM <sub>2.5</sub>	Guideline for the measurement of Ambient Air Pollutants, Volume -I, May 2011	PM 2.5 Sampler, Micro Balance
3.	SO <sub>2</sub>	IS:5182 (Part-2):2001, Improved West and Gaeke Method	Spectrophotometer, Respirable Dust Sampler with Impinger Box
4.	NO <sub>x</sub>	IS:5182 (Part-6):2006, Jacob &Hoccheiser Modified Method	Spectrophotometer, Respirable Dust Sampler with Impinger Box

**Table 13: Methodology & Instruments used for Noise level Monitoring**

S.No.	Parameters	Method	Instruments
1.	Ambient Noise Level dB (Leq)	Protocol for Ambient Level Noise Monitoring, July 2015, CPCB	Weighted sound level i.e. dB(A) Meter

**TABLE 14: Methodology & Instruments used for Drinking/Surface/Effluent water Quality Analysis**

No.	Parameters	Method	Instruments
<b>Physical Parameter</b>			
1.	PH	IS 3025 (PART 11) : 1983 , Electrometric	pH meter
2.	Turbidity	IS 3025 (PART10) : 1984, Nephelometric	Nepheloturbidity meter
3.	Taste	IS 3025 (PART 07) : 1984, Physical	-
4.	Odour	IS 3025 (PART 05) : 1983 , Physical	-
5.	Colour	IS: 3025 (Part - 4): 1983, Visual Comparison	-
6.	Total suspended solids	IS 3025 (PART 17) : 1984, Gravimetric	Hot Air Oven, Electronic balance
7.	Total dissolved solids	IS 3025 (PART 16) : 1984, Gravimetric	Hot Air Oven, Electronic balance
<b>In organic Parameters</b>			
8.	Nitrate	APHA 22nd Edition	Spectrophotometer
9.	Nitrate nitrogen	APHA 22nd Edition	spectrophotometer
10.	Ammonical Nitrogen	IS 3025 (PART 34) : 1988,	Spectrophotometer
11.	Total kjeldhal Nitrogen	IS 3025 (PART 34) : 1988	Spectrophotometer
12.	Calcium	IS 3025 (PART 40) : 1991,EDTA Titrimetric Method	Burette, Pipette
13.	Chloride	IS 3025 (PART 32) : 1988,	Spectrophotometer
14.	Fluoride	APHA 22nd Edition , IS 3025(Pat 60):SPANDS	Spectrophotometer
15.	Total Alkalinity	IS 3025 (PART 23) : 1986, Titration Method	Burette, Pipette
16.	Total hardness	IS 3025 (PART 21) : 1983, EDTA Volumetric Method	Burette, Pipette
17.	Dissolved phosphate	APHA 22nd Edition , IS 3025 (Pat 31): 1988	Spectrophotometer
18.	DO	IS 3025 (PART 38) : 1989, Winkler Azide Method	Burette, Pipette
19.	Sulfate	APHA 22nd Edition , IS 3025(Part 24): 1986, Turbidity Method	Spectrophotometer
20.	Sulfide	APHA 22nd Edition , IS 3025(Part 29):1986	Spectrophotometer
<b>Trace Metals</b>			
21.	Arsenic	APHA 22nd Edition , AAS-GTA Method	Atomic Absorption Spectrophotometer(AAS)
22.	Lead	APHA 22nd Edition , AAS-GTA Method	Atomic Absorption Spectrophotometer(AAS)
23.	Hexavalent chromium	APHA 22nd Edition	Spectrophotometer
24.	Total Chromium	IS 3025 (PART 52) : 2003,AAS-Flame Method	Atomic Absorption Spectrophotometer(AAS)
25.	Copper	IS 3025 (PART 42) : 1992, AAS-Flame Method	Atomic Absorption Spectrophotometer(AAS)
26.	Zinc	IS 3025 (PART 49) : 1994, AAS-Flame Method	Atomic Absorption Spectrophotometer(AAS)
27.	Selenium	IS 3025 (PART 56) : 2003,AAS-VGA Method	Atomic Absorption Spectrophotometer(AAS)

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28.	Cadmium	APHA 22nd Edition ,AAS-GTA Method	Atomic Absorption Spectrophotometer(AAS)
29.	Nickel	IS 3025 (PART 54) : 2003,AAS-Flame Method	Atomic Absorption Spectrophotometer(AAS)
30.	Manganese	APHA 22nd Edition ,AAS-Flame Method	Atomic Absorption Spectrophotometer(AAS)
31.	Iron	IS 3025 (PART 53) : 2003,AAS-Flame Method	Atomic Absorption Spectrophotometer(AAS)
32.	Boron	APHA 22nd Edition , Carmine Method	DR 2800
<b>General Organics &amp; Trace Organics</b>			
33.	COD	APHA 22nd Edition ,Titration Method	COD Digester
34.	O&G	IS 3025 (PART 39) : 1991, Partition gravimetric method	Hot Air Oven, Electronic Balance
35.	BOD	IS 3025 (PART 44) : 1993.3 day incubation	BOD Incubator



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# AIR QUALITY MONITORING

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## 4. AIR QUALITY DATA

Table:15

Area: Ib valley Area

Project: Samleswari OCP

Monitoring Station: Roof of Project office SOCP

Date of Sampling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
11-Apr-19	46	432	482	11.62	14.32
22-Apr-19	88	231	315	14.19	26.62
09-May-19	51	432	569	11.68	29.15
23-May-19	19	191	233	10.23	13.52
10-Jun-19	38	191	344	11.29	14.8
24-Jun-19	11	108	238	12.39	15.21
08-Jul-19	13	62	94	8.3	11.37
22-Jul-19	41	157	206	4.56	8.07
08-Aug-19	30	64	112	9.51	13.89
23-Aug-19	39	127	224	12.4	14.47
09-Sep-19	51	236	279	13.75	17.59
25-Sep-19	54	239	273	7.46	10.6
11-Oct-19	45	279	288	6.5	7.24
23-Oct-19	22	106	242	6.4	13.5
06-Nov-19	62	92	160	10.13	17.64
20-Nov-19	56	276	353	13.49	23.08
09-Dec-19	58	158	197	8.24	9.16
23-Dec-19	49	230	278	5.51	14.54
08-Jan-20	15	244	287	12.79	19.4
24-Jan-20	35	117	150	5.68	12.64
08-Feb-20	32	234	301	12.33	23.78
24-Feb-20	23	245	287	13.35	21.44
07-Mar-20	63	136	203	15.16	22.45
24-Mar-20	38	94	132	15.28	26.98
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
Maximum	88	432	569	15.28	29.15
Minimum	11	62	94	4.56	7.24
Average	40.8	195.0	260.3	10.5	16.7
Standard (24 Hrs)	60	300	600	120	120
Standard (Annual)	40	215	430	80	80

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Table: 16  
**Area:** Ib valley Area  
**Project:** Samleswari OCP  
**Monitoring Station:** Near Rejoice Club in Hill Top Colony

Date of Sampling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
11-Apr-19	90	371	445	13.09	12.35
22-Apr-19	85	221	316	16.27	33.74
09-May-19	90	451	599	12.95	26.49
23-May-19	34	299	364	11.02	23.29
10-Jun-19	33	229	325	10.52	11.3
24-Jun-19	17	151	339	14.53	18.84
08-Jul-19	51	258	349	10.04	11.17
22-Jul-19	31	67	80	6.45	7.89
08-Aug-19	57	92	153	8.75	14.79
23-Aug-19	20	202	279	7.57	16.03
09-Sep-19	29	70	101	10.66	18.6
25-Sep-19	48	201	218	5.78	7.26
11-Oct-19	26	42	71	5.85	7.11
23-Oct-19	11	241	304	7.78	11.05
06-Nov-19	40	218	280	11.21	14.31
20-Nov-19	29	192	247	6.92	14.47
09-Dec-19	13	181	229	10.87	14.06
23-Dec-19	57	238	297	8.65	11.76
08-Jan-20	34	230	298	13.98	17.12
24-Jan-20	29	198	234	10.26	11.96
08-Feb-20	22	121	172	15.39	27.45
24-Feb-20	16	99	124	9.53	18.12
07-Mar-20	23	107	141	10.1	27.2
24-Mar-20	19	82	119	12.5	34.74
<b>Brief Statistics</b>	<b>PM2.5</b>	<b>PM10</b>	<b>SPM</b>	<b>SO2</b>	<b>NOx</b>
<b>Maximum</b>	<b>90</b>	<b>451</b>	<b>599</b>	<b>16.27</b>	<b>34.74</b>
<b>Minimum</b>	<b>11</b>	<b>42</b>	<b>71</b>	<b>5.78</b>	<b>7.11</b>
<b>Average</b>	<b>37.7</b>	<b>190.0</b>	<b>253.5</b>	<b>10.4</b>	<b>17.1</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

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Table:17  
**Area:** Ib valley  
**Project:** Samleswari OCP  
**Monitoring Station:** Near Kudopali Village

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
12-Apr-19	41	451	521	11.98	16.59
23-Apr-19	47	107	181	11.32	32.61
10-May-19	59	296	455	13.15	32.84
24-May-19	33	102	172	10.34	19.18
11-Jun-19	50	299	455	12.56	13.6
25-Jun-19	52	294	486	16.52	18.1
09-Jul-19	34	51	112	13.24	16.52
23-Jul-19	34	132	179	10.79	18.02
09-Aug-19	21	38	88	13.44	25.24
26-Aug-19	16	36	74	8.24	16.54
10-Sep-19	24	58	87	20.87	27.41
26-Sep-19	36	80	90	7.39	22.77
12-Oct-19	36	108	138	10.04	14.23
24-Oct-19	12	113	180	12.69	18.97
07-Nov-19	23	159	200	9.48	22.51
20-Nov-19	86	205	255	8.24	11.57
10-Dec-19	15	169	232	15.84	20.98
24-Dec-19	39	134	167	7.13	11.9
09-Jan-20	15	40	91	15.78	21.47
28-Jan-20	15	198	250	17.71	24.42
10-Feb-20	44	128	184	11.46	25.77
24-Feb-20	39	86	114	13.25	22.92
11-Mar-20	65	109	152	12.64	34.03
25-Mar-20	41	101	145	13.8	33.21
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>86</b>	<b>451</b>	<b>521</b>	<b>20.87</b>	<b>34.03</b>
<b>Minimum</b>	<b>12</b>	<b>36</b>	<b>74</b>	<b>7.13</b>	<b>11.57</b>
<b>Average</b>	<b>36.5</b>	<b>145.6</b>	<b>208.7</b>	<b>12.4</b>	<b>21.7</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

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Table:18  
**Area:** Ib valley  
**Project:** Samleswari OCP  
**Monitoring Station:** Lajkura Village

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
11-Apr-19	105	378	452	15.57	14.99
23-Apr-19	53	298	385	10.88	30.15
10-May-19	120	275	457	16.03	26.43
24-May-19	44	107	179	10.36	19.13
11-Jun-19	68	128	243	10.83	21.5
25-Jun-19	11	125	236	13.43	18.92
09-Jul-19	44	283	335	8.19	10.19
23-Jul-19	45	278	327	6.42	12.31
09-Aug-19	59	106	187	7.45	11.52
26-Aug-19	48	67	127	8.43	20.07
09-Sep-19	15	28	75	8.88	14.42
26-Sep-19	40	95	106	9.73	15.11
12-Oct-19	10	19	35	8.74	17.7
24-Oct-19	13	54	162	13.73	19.7
06-Nov-19	37	276	352	10.09	19.32
21-Nov-19	22	238	280	12.94	15.32
10-Dec-19	22	169	224	13.7	18.33
24-Dec-19	35	227	293	15.05	13.14
09-Jan-20	12	18	63	13.45	22.65
28-Jan-20	23	156	196	18.38	13.78
10-Feb-20	24	239	313	13.71	13.9
26-Feb-20	14	225	268	14.53	15.91
11-Mar-20	61	110	199	13.97	37.46
25-Mar-20	47	97	153	13.81	28.68
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>120</b>	<b>378</b>	<b>457</b>	<b>18.38</b>	<b>37.46</b>
<b>Minimum</b>	<b>10</b>	<b>18</b>	<b>35</b>	<b>6.42</b>	<b>10.19</b>
<b>Average</b>	<b>40.5</b>	<b>166.5</b>	<b>235.3</b>	<b>12.0</b>	<b>18.8</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

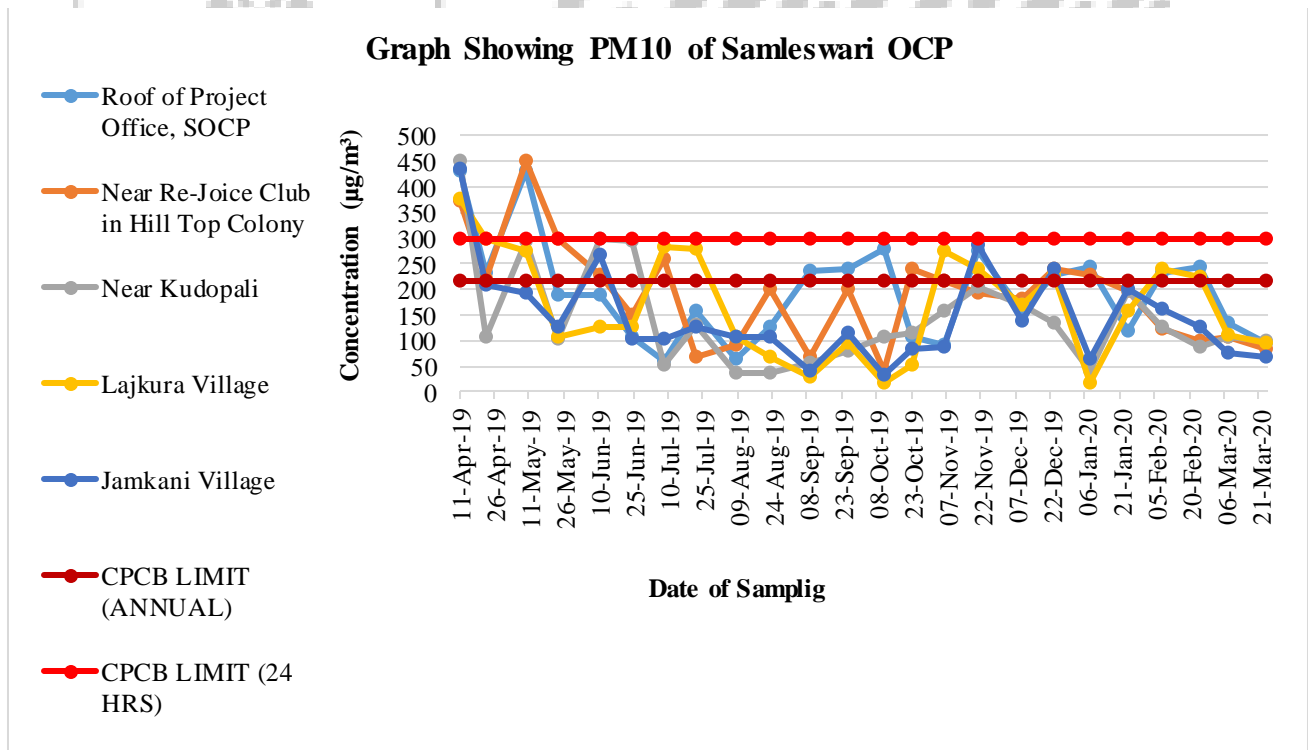
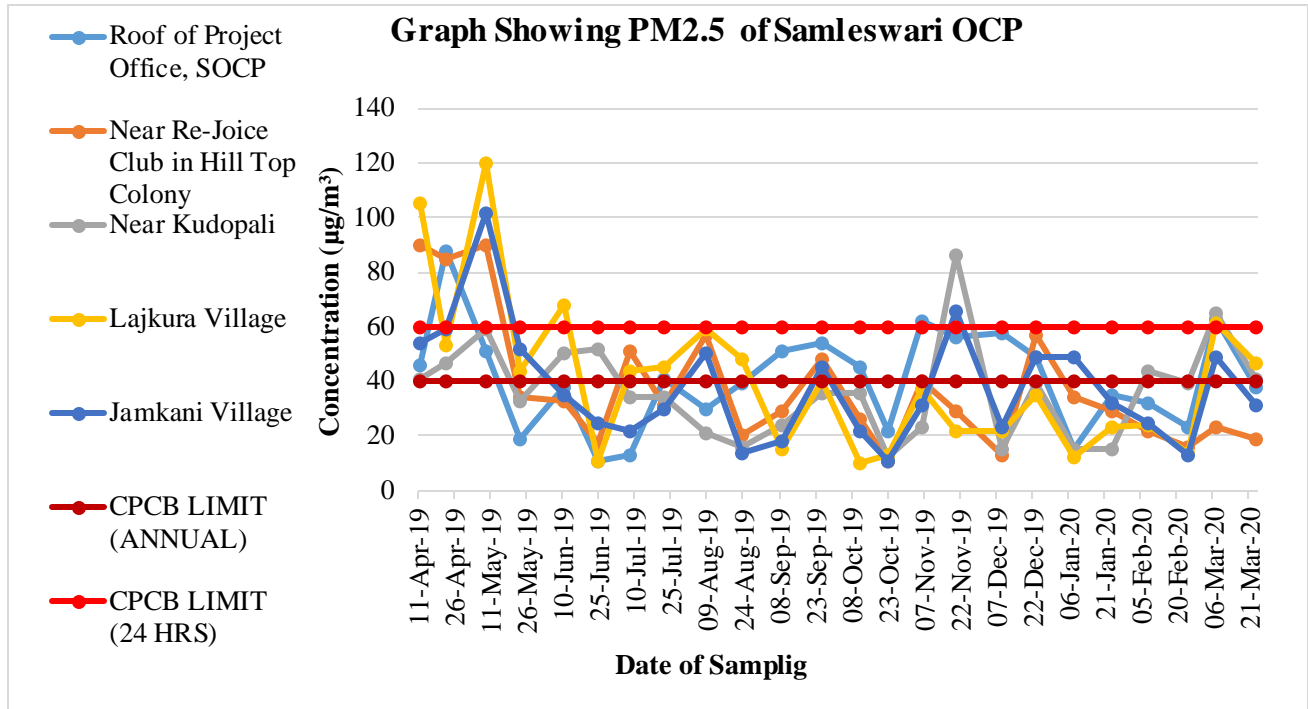


ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:19  
**Area:** Ib valley  
**Project:** Samleswari OCP  
**Monitoring Station:** Jamkani Village

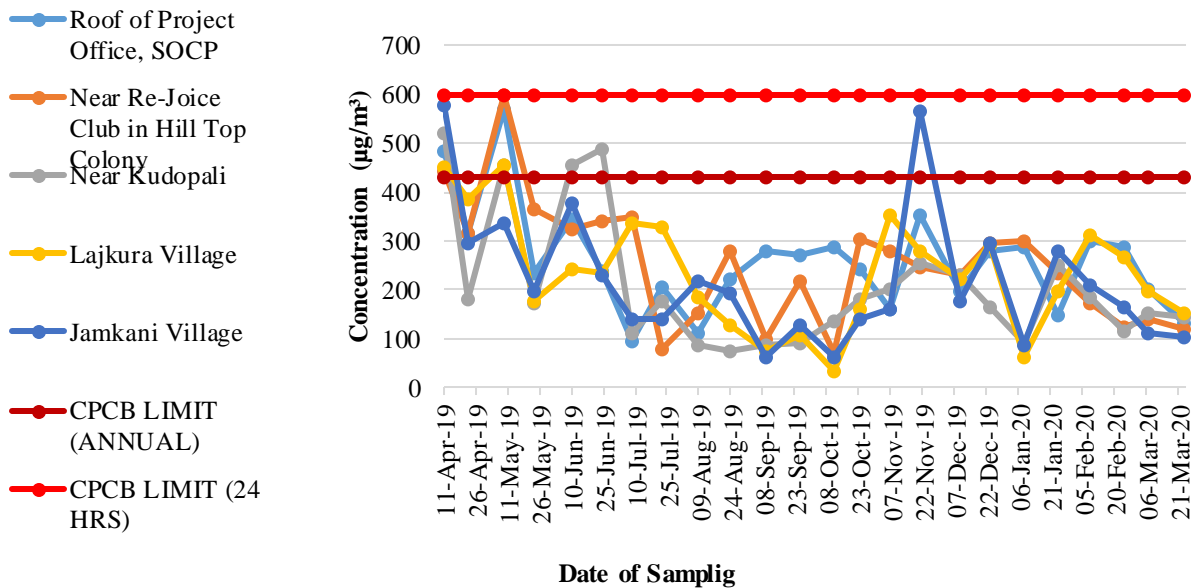
Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
11-Apr-19	54	436	576	14.41	31.29
23-Apr-19	59	208	294	12.66	17.89
10-May-19	102	192	336	13.51	33.12
24-May-19	52	127	197	11.4	16.6
11-Jun-19	35	267	376	10.99	15.7
25-Jun-19	25	104	229	13.75	15.54
09-Jul-19	22	104	139	12.41	17.12
23-Jul-19	30	125	140	9.01	14.88
09-Aug-19	50	107	220	14.19	17.53
26-Aug-19	14	106	193	10.9	17.5
10-Sep-19	18	40	62	12.31	26.58
26-Sep-19	45	115	128	10.54	17.34
12-Oct-19	22	32	64	7.78	14.17
24-Oct-19	11	85	140	8.6	16.64
07-Nov-19	31	87	161	7.24	14.01
21-Nov-19	66	288	567	10.99	16.12
10-Dec-19	23	140	178	15.61	18.25
24-Dec-19	49	241	297	8.28	16.39
09-Jan-20	49	64	88	10.67	17.89
28-Jan-20	32	201	278	12.78	21.05
10-Feb-20	25	161	210	10.88	11.97
26-Feb-20	13	127	165	9.69	19.41
11-Mar-20	49	77	113	11.92	37.3
25-Mar-20	31	70	103	12.07	23.47
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
Maximum	102	436	576	15.61	37.3
Minimum	11	32	62	7.24	11.97
Average	37.8	146.0	218.9	11.4	19.5
Standard (24 Hrs)	60	300	600	120	120
Standard (Annual)	40	215	430	80	80

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

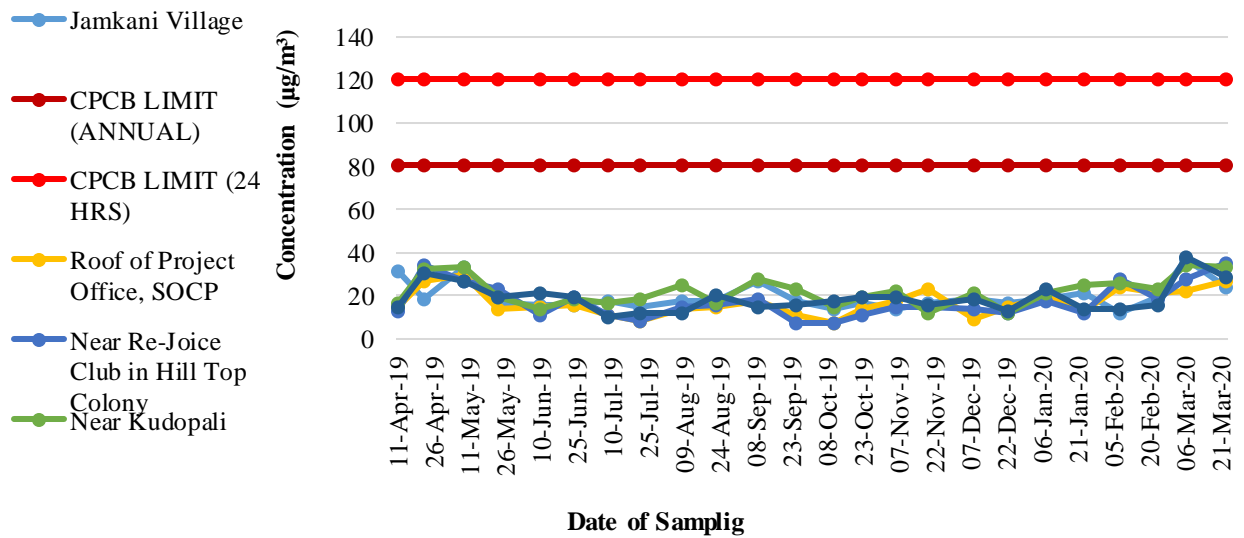


ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

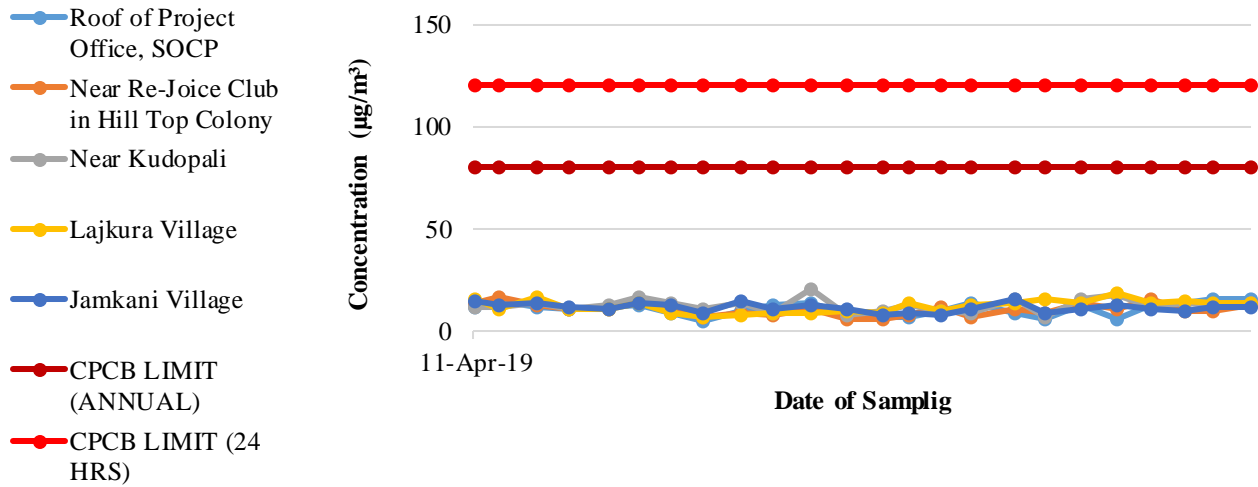
Graph Showing SPM of Samleswari OCP



Graph Showing NOX of Samleswari OCP



**Graph Showing SOX of Samleswari OCP**



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:20  
**Area:** Ib valley  
**Project:** Lajkura OCP  
**Monitoring Station:** Near Project Office

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
09-Apr-19	40	271	323	11.82	24.43
20-Apr-19	40	242	370	15.56	18.3
08-May-19	71	365	596	13.31	29.33
22-May-19	18	229	322	13.47	15.58
07-Jun-19	57	144	187	11.16	19.3
21-Jun-19	44	283	356	13.29	15.06
05-Jul-19	25	141	236	11.28	9.94
19-Jul-19	80	187	262	9.28	11.48
07-Aug-19	23	159	272	11.63	14.7
22-Aug-19	43	194	255	8.43	6.01
06-Sep-19	32	208	236	9.22	17.72
23-Sep-19	52	154	198	9.76	11.59
10-Oct-19	32	103	123	15.84	21.64
24-Oct-19	30	105	219	9.18	14.26
08-Nov-19	24	146	204	8.27	15.38
22-Nov-19	106	263	312	5.97	17.88
06-Dec-19	53	241	291	13.61	15.91
20-Dec-19	17	65	98	8.79	23.88
07-Jan-20	27	144	195	12.25	24.61
24-Jan-20	34	113	167	11.15	24.57
07-Feb-20	30	143	185	8.6	15.69
22-Feb-20	23	115	147	9.2	25.47
06-Mar-20	32	70	136	13.65	35.33
23-Mar-20	24	76	116	14.59	19.36
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>106</b>	<b>365</b>	<b>596</b>	<b>15.84</b>	<b>35.33</b>
<b>Minimum</b>	<b>17</b>	<b>65</b>	<b>98</b>	<b>5.97</b>	<b>6.01</b>
<b>Average</b>	<b>39.9</b>	<b>173.4</b>	<b>241.9</b>	<b>11.2</b>	<b>18.6</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

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Table:21  
**Area:** Ib valley  
**Project:** Lajkura OCP  
**Monitoring Station:** Near South Coal Stock

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
10-Apr-19	96	383	441	12.79	39.85
20-Apr-19	59	177	267	14.44	30.01
08-May-19	126	366	593	11.65	26.04
22-May-19	22	340	422	13.22	21.63
07-Jun-19	51	241	319	12.46	14.4
21-Jun-19	13	231	390	12.81	13.63
05-Jul-19	33	93	200	12.71	13.6
19-Jul-19	75	106	126	9.38	15.83
07-Aug-19	30	133	189	9.82	13.54
22-Aug-19	69	286	369	9.07	13.76
06-Sep-19	62	122	179	9.55	11.9
23-Sep-19	18	35	52	6.87	14.22
10-Oct-19	48	189	237	10.08	10.86
26-Oct-19	17	128	161	7.45	13.61
08-Nov-19	27	114	185	7.71	16.51
22-Nov-19	43	152	218	8.25	10.81
06-Dec-19	10	210	283	9.68	12.53
20-Dec-19	12	257	310	8.24	10.01
07-Jan-20	59	251	322	14.51	26.8
24-Jan-20	48	248	293	14.11	14.63
07-Feb-20	57	294	372	11.42	11.4
22-Feb-20	48	283	349	9.83	11.9
06-Mar-20	23	115	195	9.3	22.73
23-Mar-20	27	107	162	12.82	32.91
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>126</b>	<b>383</b>	<b>593</b>	<b>14.51</b>	<b>39.85</b>
<b>Minimum</b>	<b>10</b>	<b>35</b>	<b>52</b>	<b>6.87</b>	<b>10.01</b>
<b>Average</b>	<b>44.7</b>	<b>202.5</b>	<b>276.4</b>	<b>10.8</b>	<b>17.6</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:22  
**Area:** Ib valley  
**Project:** Lajkura OCP  
**Monitoring Station:** Near Adarsh Nagar Colony

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
09-Apr-19	84	144	218	14.48	31.33
20-Apr-19	41	384	464	13.81	28.68
08-May-19	73	425	528	11.28	29.82
21-May-19	22	227	285	12.15	16.82
07-Jun-19	36	256	466	10.27	28.3
21-Jun-19	12	118	287	11	11.9
05-Jul-19	28	77	217	10.37	10.44
19-Jul-19	19	59	95	9.51	13.08
07-Aug-19	20	39	62	10.91	12.38
22-Aug-19	17	75	207	11.48	10.24
06-Sep-19	32	114	158	8.92	15.39
23-Sep-19	14	30	47	5.29	11.28
10-Oct-19	20	91	111	7.16	10.74
26-Oct-19	12	190	226	12.97	9.12
08-Nov-19	24	139	217	7.47	10.36
25-Nov-19	18	118	207	5.5	7.93
06-Dec-19	54	137	192	9.29	12.42
20-Dec-19	23	343	439	8.4	23.84
07-Jan-20	22	103	141	16.21	20.62
23-Jan-20	45	161	216	11.45	26.72
07-Feb-20	29	223	312	10.77	23.64
22-Feb-20	36	283	353	7.45	20.95
06-Mar-20	26	133	236	11.24	27.81
23-Mar-20	22	98	135	18.3	33.33
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>84</b>	<b>425</b>	<b>528</b>	<b>18.3</b>	<b>33.33</b>
<b>Minimum</b>	<b>12</b>	<b>30</b>	<b>47</b>	<b>5.29</b>	<b>7.93</b>
<b>Average</b>	<b>30.4</b>	<b>165.3</b>	<b>242.5</b>	<b>10.7</b>	<b>18.6</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

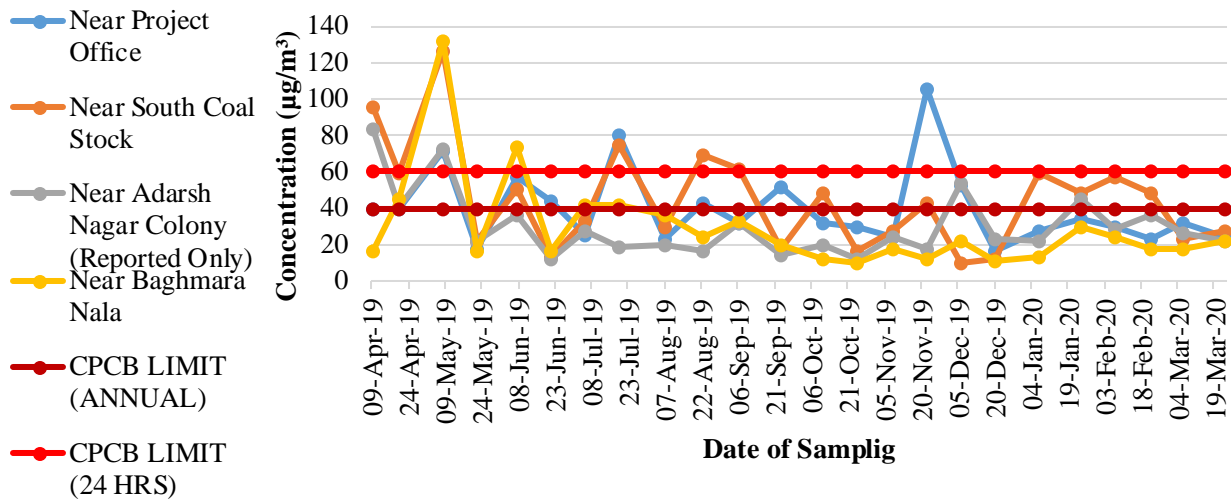
Table:23  
**Area:** Ib valley  
**Project:** Lajkura OCP  
**Monitoring Station:** Near Baghmara Nala

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
09-Apr-19	17	91	175	18.3	33.33
20-Apr-19	45	291	407	17.17	27.35
08-May-19	132	381	564	12.06	35.12
22-May-19	17	365	441	11.48	22.25
07-Jun-19	74	289	405	13.22	12.4
21-Jun-19	17	148	302	16.19	21
05-Jul-19	42	213	393	13	17.93
19-Jul-19	42	70	89	7.99	10.09
07-Aug-19	36	62	122	12.22	17.84
22-Aug-19	24	522	599	8.01	17.16
06-Sep-19	33	83	144	9.61	13.43
23-Sep-19	20	42	62	6.8	18.63
10-Oct-19	12	22	60	11.39	12.26
26-Oct-19	10	75	101	9.39	20.98
08-Nov-19	18	153	207	10.98	14.28
25-Nov-19	12	114	235	5.9	14.56
06-Dec-19	22	264	320	9.97	11.08
20-Dec-19	11	118	142	6.2	13.89
07-Jan-20	13	49	151	10.83	23.33
24-Jan-20	30	156	188	10.46	19.53
07-Feb-20	24	154	203	11.77	11.63
22-Feb-20	18	118	151	9.52	21.32
06-Mar-20	18	86	156	11.62	34.14
23-Mar-20	22	79	121	12.71	22.36
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>132</b>	<b>522</b>	<b>599</b>	<b>18.3</b>	<b>35.12</b>
<b>Minimum</b>	<b>10</b>	<b>22</b>	<b>60</b>	<b>5.9</b>	<b>10.09</b>
<b>Average</b>	<b>29.5</b>	<b>164.4</b>	<b>239.1</b>	<b>11.1</b>	<b>19.4</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

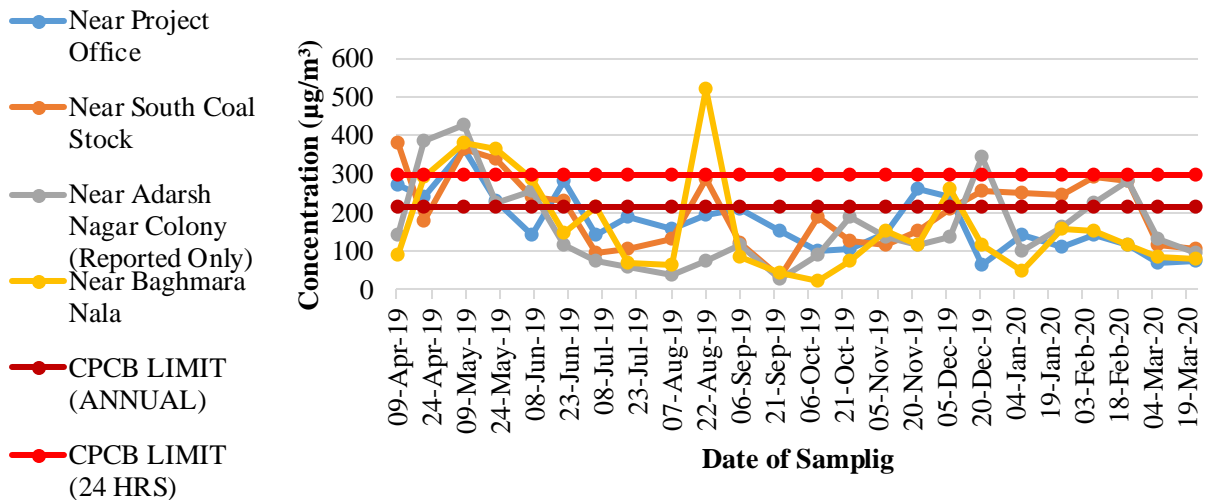


ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph Showing PM2.5 of Lajkura OCP

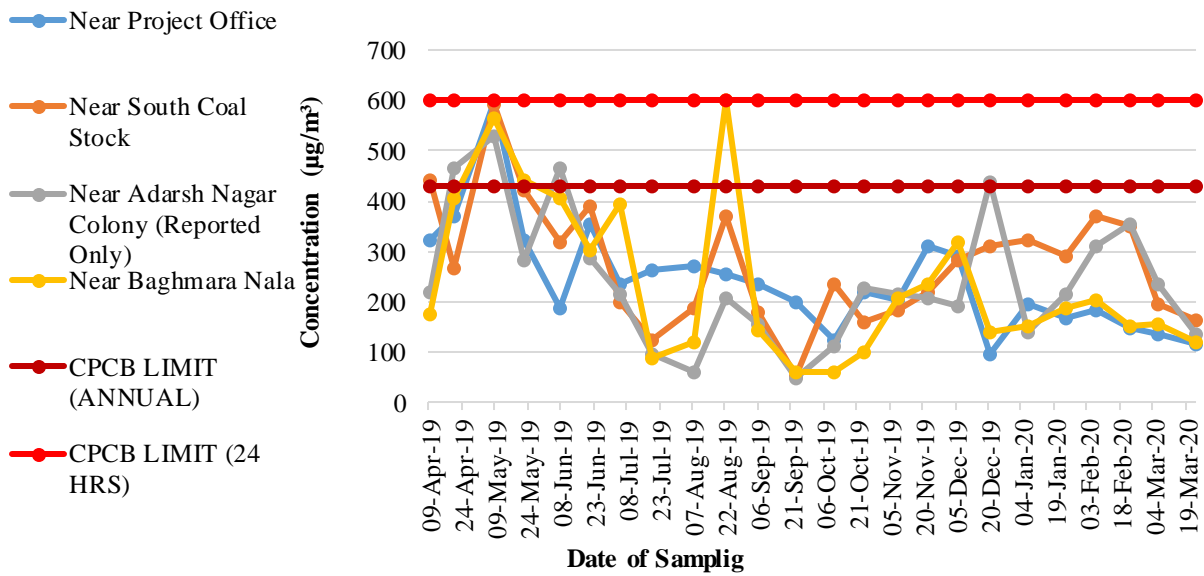


Graph Showing PM10 of Lajkura OCP

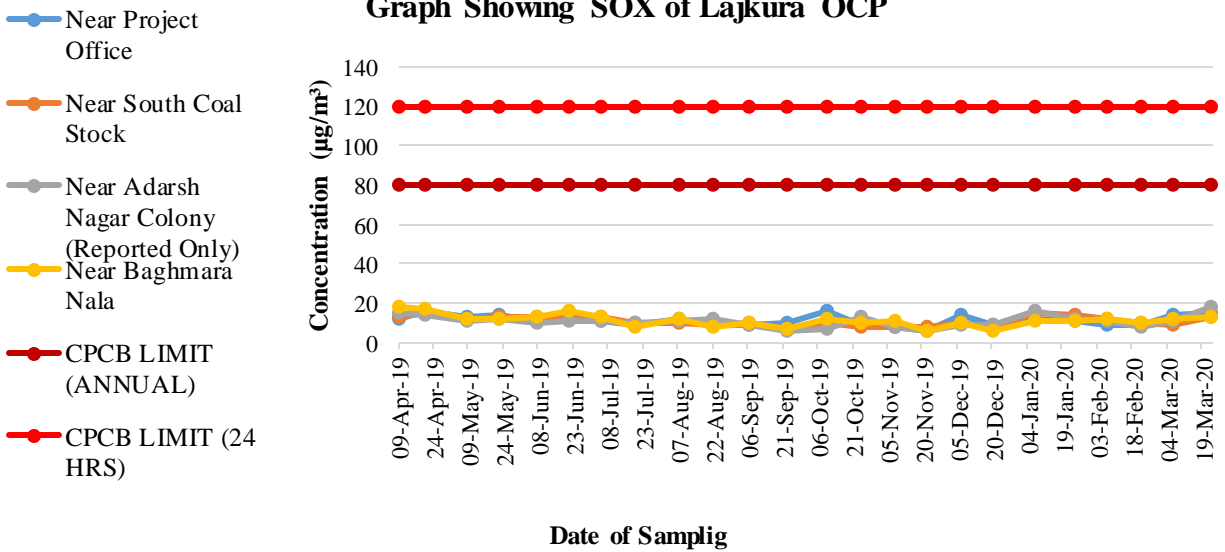


ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

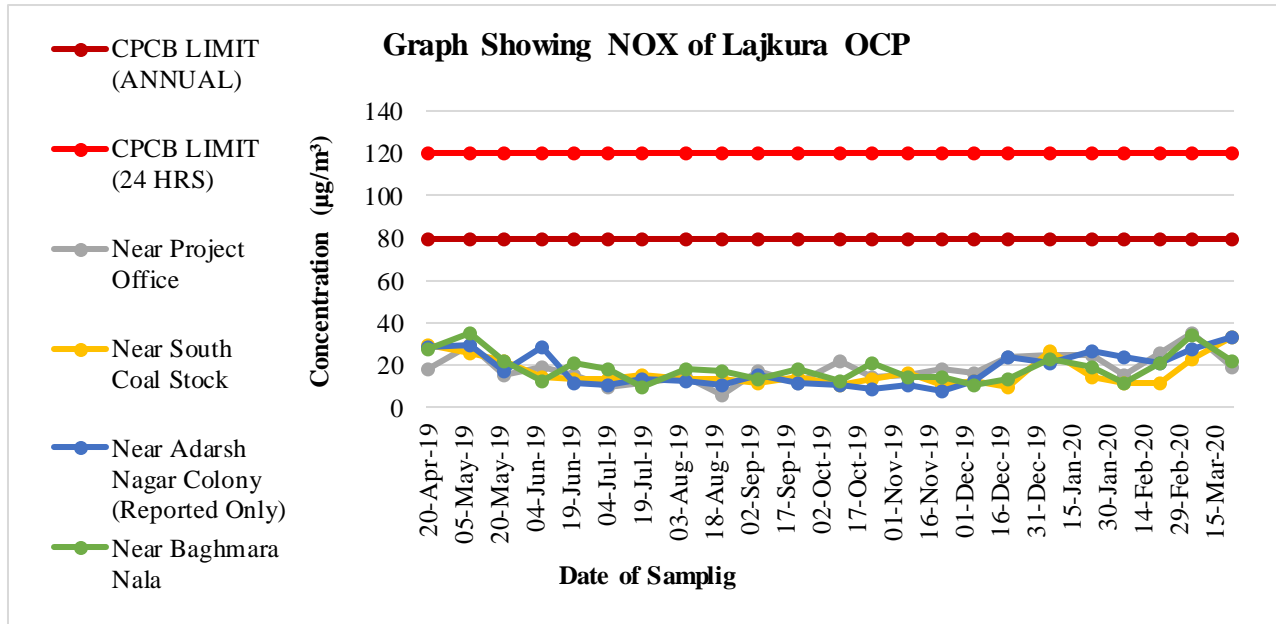
Graph Showing SPM of Lajkura OCP



Graph Showing SOX of Lajkura OCP



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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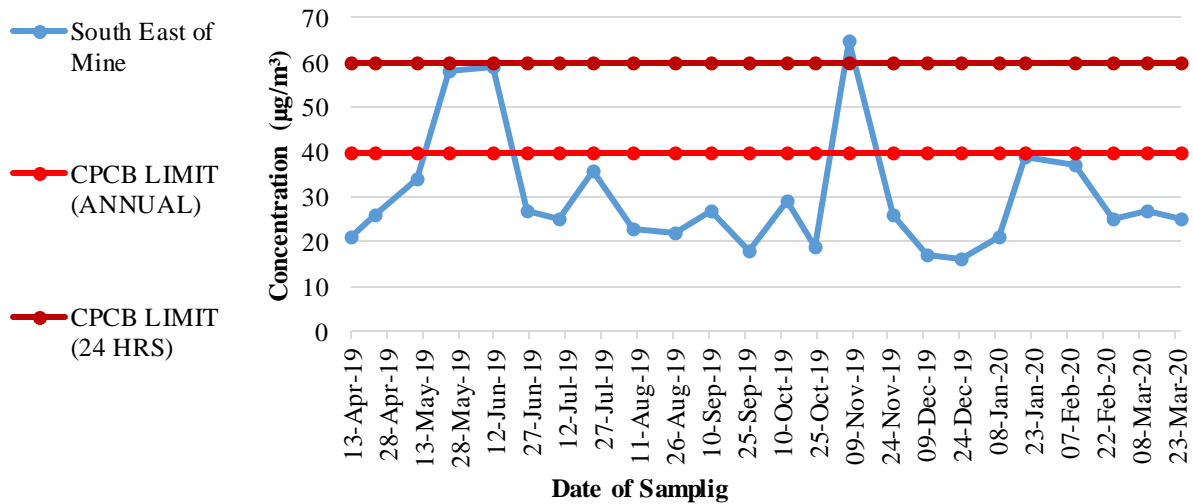
ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:24  
**Area:**Lakhanpur  
**Project:** Lilari OCP  
**Monitoring Station:** South East of Mine

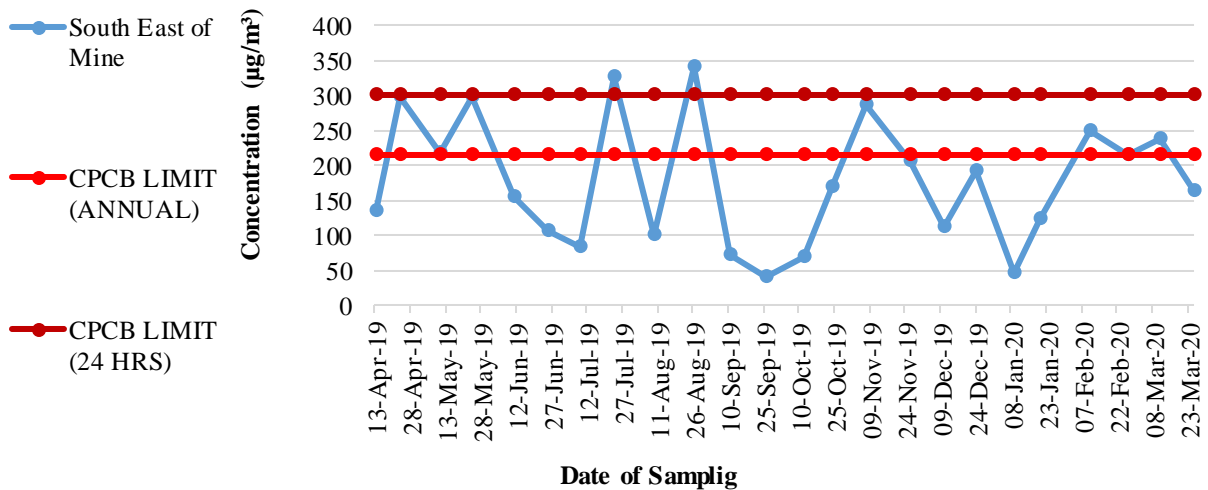
Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
13-Apr-19	21	136	227	12.27	29.98
23-Apr-19	26	299	371	10.74	33.57
10-May-19	34	219	281	12.59	30.18
24-May-19	58	298	436	10.23	14.88
11-Jun-19	59	156	284	10.57	14.6
25-Jun-19	27	107	231	11.51	14.33
09-Jul-19	25	83	124	11.78	12.45
23-Jul-19	36	327	356	9.19	11.38
09-Aug-19	23	100	218	6.39	9.78
26-Aug-19	22	341	405	7.48	8.16
10-Sep-19	27	71	110	7.39	11.91
26-Sep-19	18	40	66	8.8	23.21
12-Oct-19	29	70	88	9.19	12.56
24-Oct-19	19	168	318	8.76	8.8
07-Nov-19	65	287	349	8.35	13.34
26-Nov-19	26	207	230	7.74	17.36
10-Dec-19	17	112	159	7.3	8.12
24-Dec-19	16	191	220	7.77	15.84
09-Jan-20	21	46	96	11.95	20.13
20-Jan-20	39	124	168	13.22	22.27
10-Feb-20	37	248	312	13.76	16.56
26-Feb-20	25	216	253	9.13	18.94
11-Mar-20	27	239	302	14.65	30.23
25-Mar-20	25	163	236	13.45	28.58
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>65</b>	<b>341</b>	<b>436</b>	<b>14.65</b>	<b>33.57</b>
<b>Minimum</b>	<b>16</b>	<b>40</b>	<b>66</b>	<b>6.39</b>	<b>8.12</b>
<b>Average</b>	<b>30.1</b>	<b>177.0</b>	<b>243.3</b>	<b>10.2</b>	<b>17.8</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph Showing PM2.5 of Lilari OCP

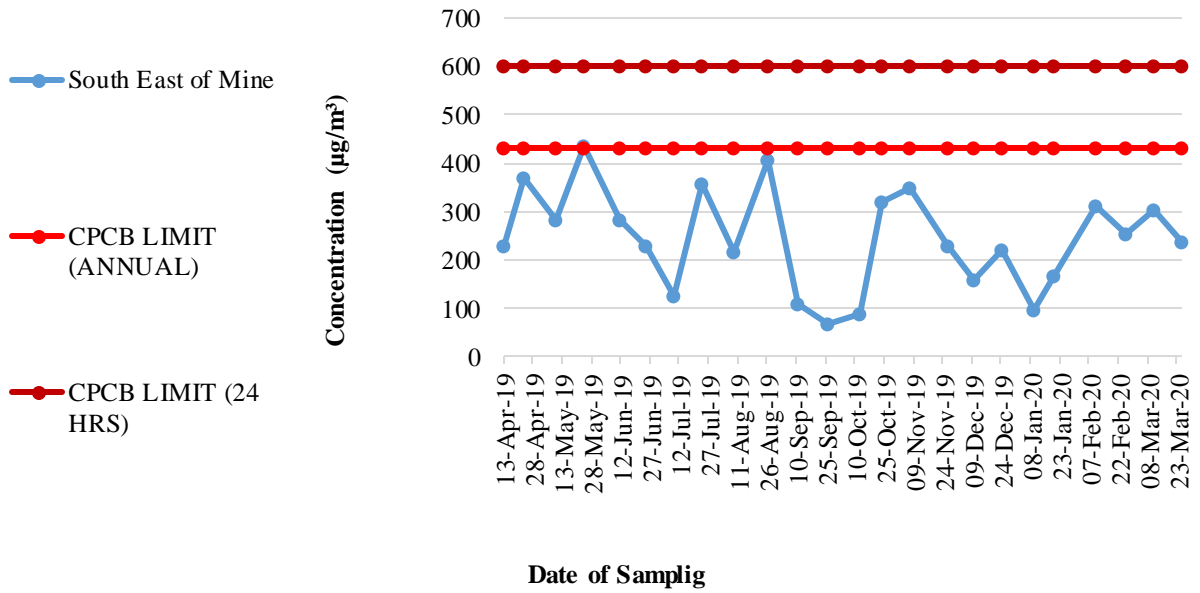


Graph Showing PM10 of Lilari OCP

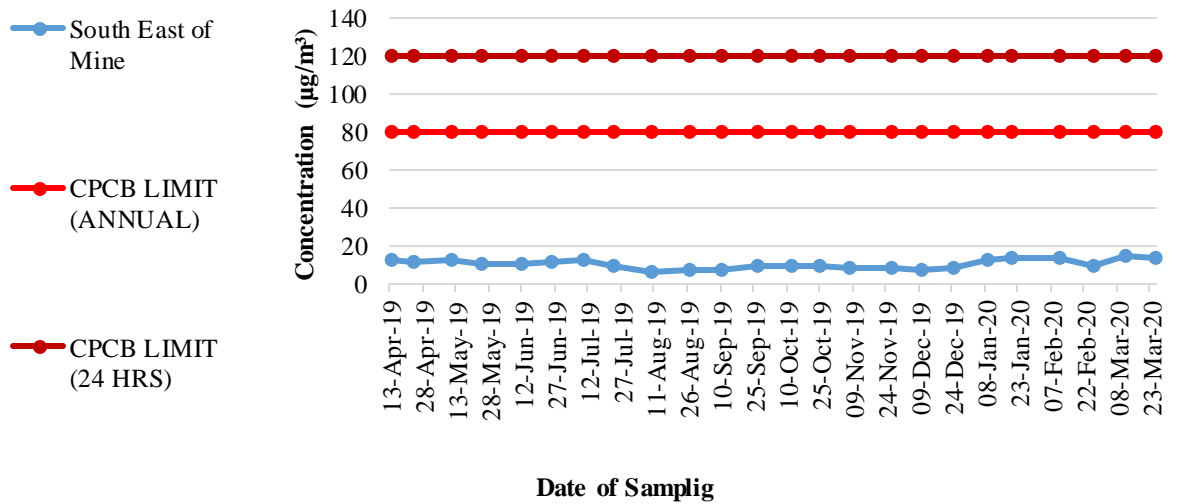


ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

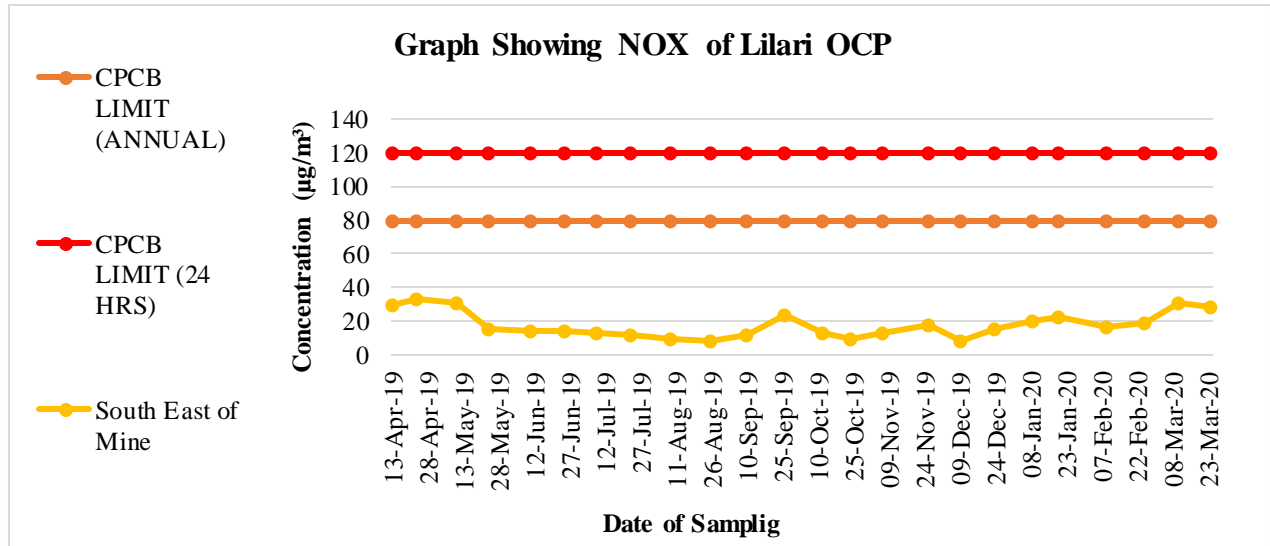
Graph Showing SPM of Lilari OCP



Graph Showing SOX of Lilari OCP



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:25  
**Area:** Lakhanpur  
**Project:** Lakhanpur OCP  
**Monitoring Station:** South of Quarry 5

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
13-Apr-19	34	280	353	11.69	36.65
25-Apr-19	58	270	332	10.97	31.28
13-May-19	39	117	182	12.06	26.79
27-May-19	39	350	510	11.97	28.11
13-Jun-19	30	117	299	11.37	29.95
27-Jun-19	33	117	173	15.03	19.26
11-Jul-19	18	47	76	14.6	12.42
25-Jul-19	30	74	246	14.05	18.64
13-Aug-19	50	586	685	10.93	13.65
28-Aug-19	13	33	126	5.88	8.4
12-Sep-19	41	150	313	6.39	19.85
28-Sep-19	16	33	51	6.87	11.72
15-Oct-19	52	233	320	9.49	10.37
29-Oct-19	11	93	136	9.81	12.55
13-Nov-19	43	71	151	9.24	17.1
28-Nov-19	31	185	262	10.01	12.25
12-Dec-19	24	130	164	9.5	15.19
26-Dec-19	79	157	174	10.69	11.89
13-Jan-20	31	61	122	14.03	22.5
30-Jan-20	14	255	329	15.88	15.16
12-Feb-20	46	164	222	12.77	11.45
28-Feb-20	39	115	157	12.36	14.25
13-Mar-20	45	98	178	10.78	35.92
27-Mar-20	31	81	137	11.12	17.36
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>79</b>	<b>586</b>	<b>685</b>	<b>15.88</b>	<b>36.65</b>
<b>Minimum</b>	<b>11</b>	<b>33</b>	<b>51</b>	<b>5.88</b>	<b>8.4</b>
<b>Average</b>	<b>35.3</b>	<b>159.0</b>	<b>237.4</b>	<b>11.1</b>	<b>18.9</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:26  
**Area:** Lakhanpur  
**Project:** Lakhanpur OCP  
**Monitoring Station:** Near Quarry 3

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
13-Apr-19	45	346	462	15.71	37.43
25-Apr-19	55	115	254	13.3	34.14
13-May-19	110	382	484	11.33	34.21
27-May-19	31	126	241	12.32	19.9
13-Jun-19	48	239	407	11.1	16.3
27-Jun-19	37	101	257	16.03	16.63
11-Jul-19	26	56	142	12.04	17.18
25-Jul-19	27	69	196	6.19	11.93
13-Aug-19	40	325	371	9.34	12.12
28-Aug-19	22	56	116	6.85	9.17
12-Sep-19	20	43	55	9.56	15.09
28-Sep-19	30	70	93	8.92	12.68
15-Oct-19	48	156	220	9.83	11.94
29-Oct-19	13	76	113	9.8	11.64
13-Nov-19	67	98	134	10.91	16.32
28-Nov-19	63	124	164	9.15	16.21
12-Dec-19	24	166	214	10.7	17.1
27-Dec-19	27	213	249	9.23	14.85
13-Jan-20	46	97	103	20.19	23.55
30-Jan-20	12	76	118	13.8	18.64
12-Feb-20	27	180	243	9.79	13.36
28-Feb-20	19	148	178	11.44	18.85
13-Mar-20	20	77	112	11.88	28.52
27-Mar-20	24	86	109	13.29	33.17
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>110</b>	<b>382</b>	<b>484</b>	<b>20.19</b>	<b>37.43</b>
<b>Minimum</b>	<b>12</b>	<b>43</b>	<b>55</b>	<b>6.19</b>	<b>9.17</b>
<b>Average</b>	<b>36.7</b>	<b>142.7</b>	<b>209.8</b>	<b>11.4</b>	<b>19.2</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:27  
**Area:** Lakhanpur  
**Project:** Lakhanpur OCP  
**Monitoring Station:** West of Quarry 1

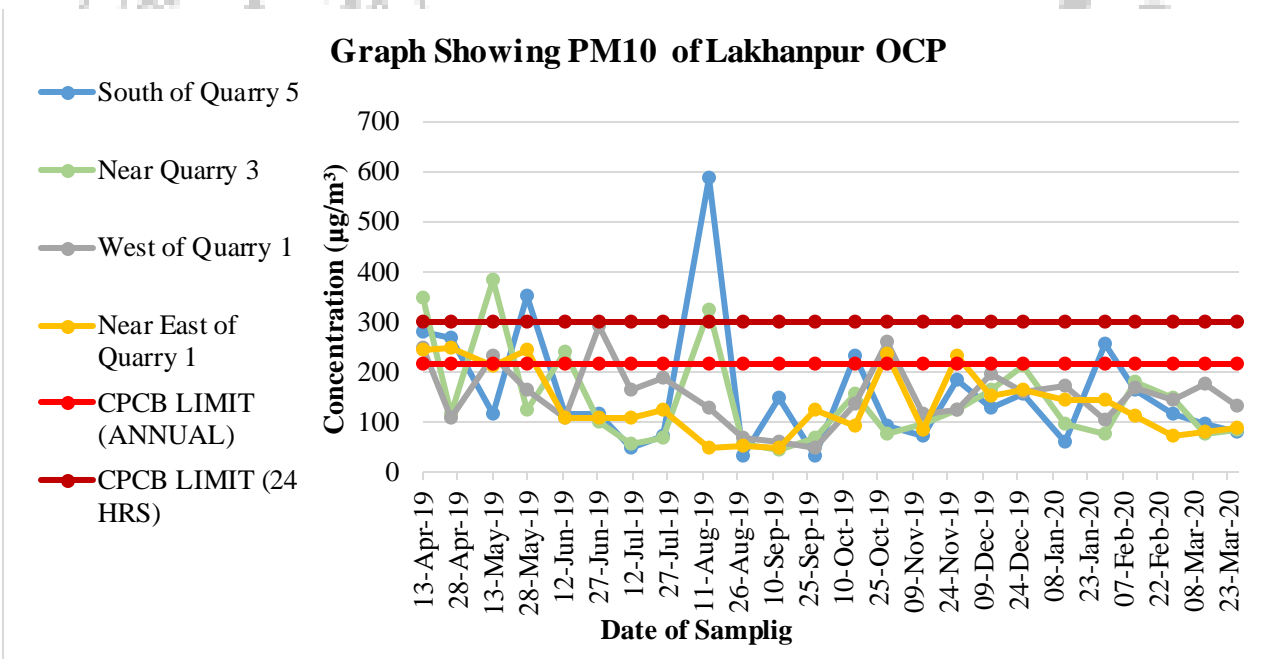
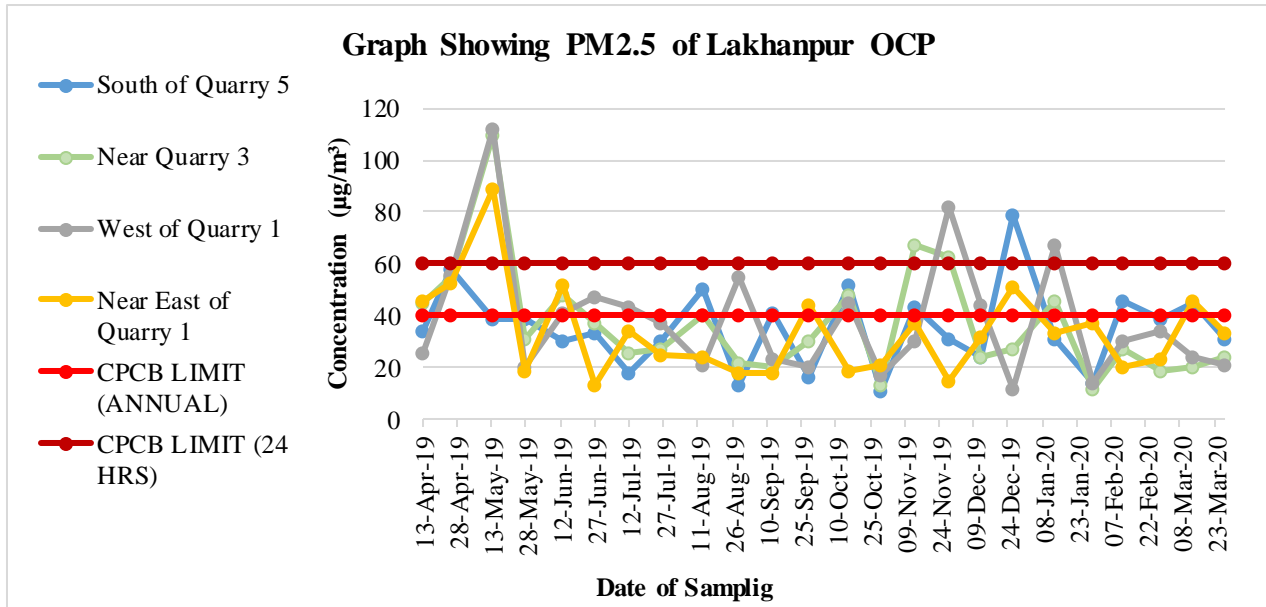
Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
13-Apr-19	26	247	392	10.65	34.79
25-Apr-19	56	107	251	12	34
13-May-19	112	234	326	14.44	27.57
27-May-19	20	163	200	10.98	22.26
13-Jun-19	41	107	244	11.64	24.33
27-Jun-19	47	293	407	13.24	18.66
11-Jul-19	43	164	191	10.25	12.05
25-Jul-19	37	188	373	10.78	19.06
13-Aug-19	21	130	212	8.62	9.4
28-Aug-19	55	68	152	7	12.5
12-Sep-19	23	59	76	12.24	10.8
28-Sep-19	20	50	94	7.15	7.84
15-Oct-19	45	138	202	7.22	8.04
29-Oct-19	17	262	361	8.38	10.21
13-Nov-19	30	117	156	7.02	13.78
28-Nov-19	82	123	174	10.71	20.02
12-Dec-19	44	197	223	12.17	15.74
26-Dec-19	12	162	195	12.38	21.04
13-Jan-20	67	174	248	14.84	24.24
30-Jan-20	14	104	181	22.53	31.14
12-Feb-20	30	167	214	13.51	12.46
28-Feb-20	34	145	190	15.42	27.59
13-Mar-20	24	177	238	15.15	38.32
27-Mar-20	21	131	184	14.15	36.72
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>112</b>	<b>293</b>	<b>407</b>	<b>22.53</b>	<b>38.32</b>
<b>Minimum</b>	<b>12</b>	<b>50</b>	<b>76</b>	<b>7</b>	<b>7.84</b>
<b>Average</b>	<b>38.4</b>	<b>154.5</b>	<b>228.5</b>	<b>11.8</b>	<b>20.5</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:28  
**Area:** Lakhanpur  
**Project:** Lakhanpur OCP  
**Monitoring Station:** Near East of Quarry 1

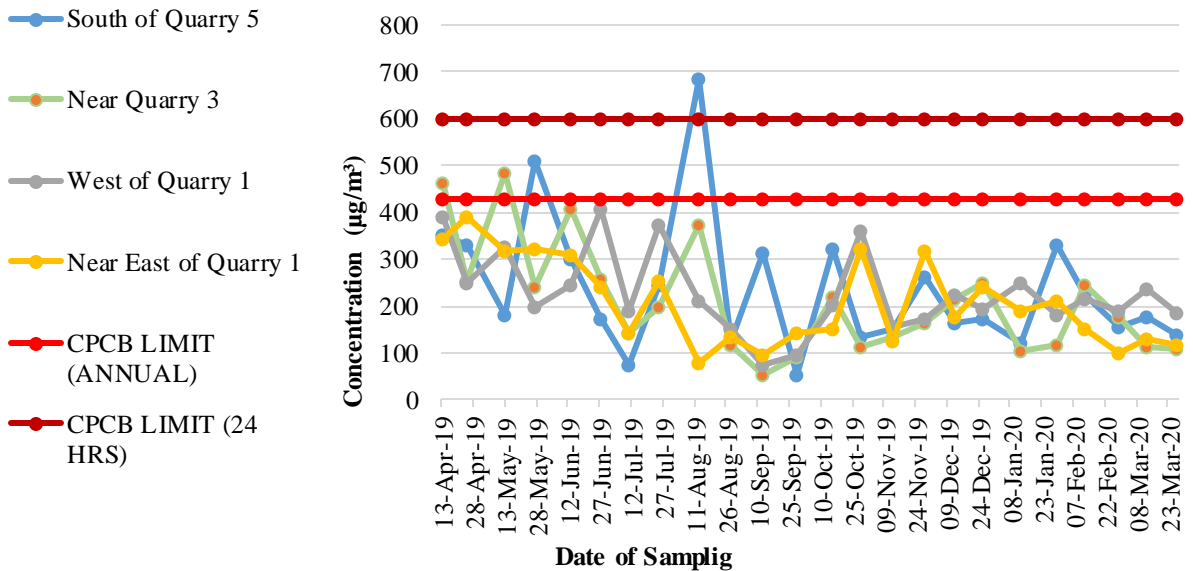
Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
13-Apr-19	46	246	344	15.21	34.69
25-Apr-19	53	249	390	11	30
13-May-19	89	214	316	13.09	35.49
27-May-19	19	243	323	10.42	14.37
13-Jun-19	52	109	309	12.51	19.98
27-Jun-19	13	109	242	11.61	16.86
11-Jul-19	34	109	143	13.31	12.63
25-Jul-19	25	126	254	11.31	20.01
13-Aug-19	24	50	78	7.06	9
28-Aug-19	18	52	132	9.29	9.95
12-Sep-19	18	49	94	6.57	9.75
28-Sep-19	44	126	142	7.5	16.88
15-Oct-19	19	91	149	6.77	8.48
29-Oct-19	21	238	323	9.69	8.85
13-Nov-19	37	83	126	7.63	23.28
28-Nov-19	15	233	317	7.04	11.85
12-Dec-19	32	153	177	7.89	12.05
26-Dec-19	51	164	241	5.89	14.15
13-Jan-20	33	146	190	19.23	16.44
29-Jan-20	37	146	211	10.04	20.07
12-Feb-20	20	114	152	10.89	24.34
28-Feb-20	23	71	100	7.8	18.54
13-Mar-20	46	79	131	10.68	28.38
27-Mar-20	33	87	117	10.35	28.48
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>89</b>	<b>249</b>	<b>390</b>	<b>19.23</b>	<b>35.49</b>
<b>Minimum</b>	<b>13</b>	<b>49</b>	<b>78</b>	<b>5.89</b>	<b>8.48</b>
<b>Average</b>	<b>33.4</b>	<b>137.0</b>	<b>208.4</b>	<b>10.1</b>	<b>18.5</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

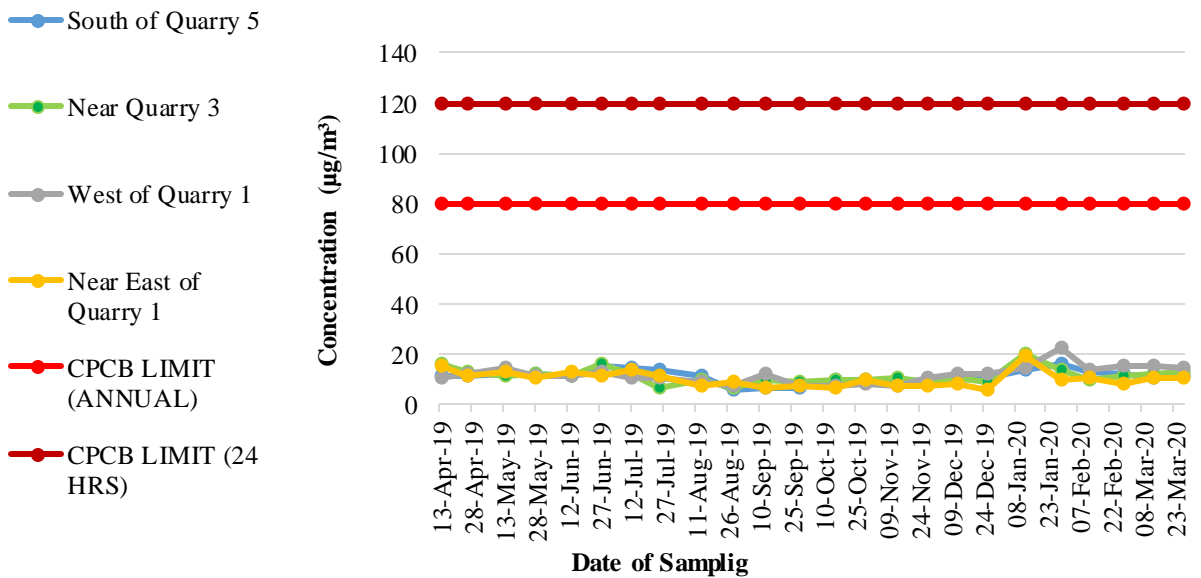


ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph Showing SPM of Lakhanpur OCP

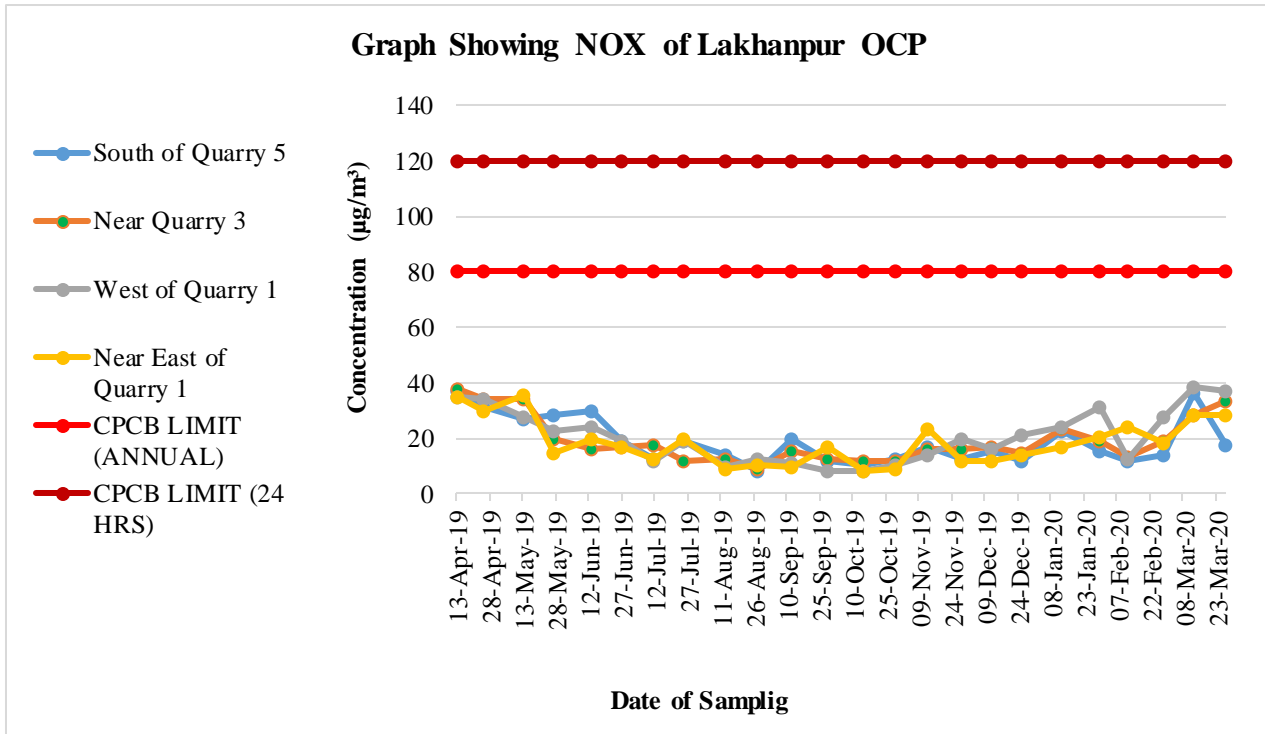


Graph Showing SOX of Lakhanpur OCP



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph Showing NOX of Lakhanpur OCP



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:29  
**Area:** Lakhanpur  
**Project:** Belpahar OCP  
**Monitoring Station:** South West of Mine

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
13-Apr-19	97	176	271	15.28	39.22
24-Apr-19	42	380	478	12.9	30.34
11-May-19	94	428	500	12.35	30.82
25-May-19	42	388	558	13.9	15.97
12-Jun-19	55	294	456	13.2	30.03
26-Jun-19	12	120	194	14.35	21.15
10-Jul-19	41	134	178	12.99	10.84
24-Jul-19	20	49	185	10.83	14.12
12-Aug-19	30	156	233	10.91	12.38
27-Aug-19	18	42	104	5.71	6.79
11-Sep-19	34	63	77	7.82	15.19
27-Sep-19	23	45	55	8.83	20.17
14-Oct-19	43	194	210	9.48	13.43
28-Oct-19	14	75	154	11.37	21.43
12-Nov-19	43	77	111	8.45	11.07
27-Nov-19	101	201	262	8.03	12.81
11-Dec-19	12	243	284	10.23	9.95
25-Dec-19	68	275	339	9.85	14.27
10-Jan-20	32	122	192	23.44	23.69
29-Jan-20	18	116	170	15.24	18.71
11-Feb-20	32	293	374	10.72	22.76
27-Feb-20	21	274	332	10.79	15.99
12-Mar-20	34	123	176	14.7	30.26
26-Mar-20	26	109	154	14.9	31.86
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>101</b>	<b>428</b>	<b>558</b>	<b>23.44</b>	<b>39.22</b>
<b>Minimum</b>	<b>12</b>	<b>42</b>	<b>55</b>	<b>5.71</b>	<b>6.79</b>
<b>Average</b>	<b>39.7</b>	<b>182.4</b>	<b>252.0</b>	<b>11.9</b>	<b>19.7</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:30  
**Area:** Lakhanpur  
**Project:** Belpahar OCP  
**Monitoring Station:** Near Quarry 5

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
12-Apr-19	53	284	359	12.5	34.74
24-Apr-19	73	198	302	14.46	24.74
11-May-19	52	291	353	15.02	36.34
25-May-19	53	149	221	12.51	16.53
12-Jun-19	52	250	344	13.6	24.6
26-Jun-19	52	168	290	10.67	21.09
10-Jul-19	12	93	159	11.2	17.04
24-Jul-19	32	72	209	10.66	15.26
12-Aug-19	38	125	219	12.06	17.93
27-Aug-19	25	94	162	9.15	7.14
11-Sep-19	10	13	32	5.2	18.2
27-Sep-19	12	19	31	8.38	19.15
14-Oct-19	40	101	120	10.35	17.15
28-Oct-19	19	53	115	12.83	15.94
12-Nov-19	26	232	264	9	13.77
27-Nov-19	34	226	316	10.46	14.4
11-Dec-19	57	180	268	12.18	12.2
25-Dec-19	21	291	366	10.68	13.36
10-Jan-20	28	166	223	14.47	23.01
29-Jan-20	23	59	112	14.89	15.79
11-Feb-20	31	161	214	14.61	33.05
27-Feb-20	26	128	165	13.23	17.15
12-Mar-20	26	110	154	13.64	28.06
26-Mar-20	22	88	131	12.22	15.33
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>73</b>	<b>291</b>	<b>366</b>	<b>15.02</b>	<b>36.34</b>
<b>Minimum</b>	<b>10</b>	<b>13</b>	<b>31</b>	<b>5.2</b>	<b>7.14</b>
<b>Average</b>	<b>34.0</b>	<b>148.0</b>	<b>213.7</b>	<b>11.8</b>	<b>19.7</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:31  
**Area:** Lakhanpur  
**Project:** Belpahar OCP  
**Monitoring Station:** Near PO Office

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
12-Apr-19	41				
24-Apr-19	32	111	191	13.87	30.4
11-May-19	37	421	536	11.78	27.44
25-May-19	21	144	211	13.83	18.28
12-Jun-19	31	225	303	11.16	20.1
26-Jun-19	24	108	219	12.24	15.12
10-Jul-19	30	172	227	9.36	14.66
24-Jul-19	16	43	155	8.49	14.18
12-Aug-19	42	69	157	9.68	15.54
27-Aug-19	16	213	304	8.06	12.59
11-Sep-19	60	272	284	8.37	21.42
27-Sep-19	15	24	43	9.27	14.26
14-Oct-19	36	158	168	5.79	15.06
28-Oct-19	40	286	378	8.23	9.19
12-Nov-19	38	85	104	9.31	14.47
27-Nov-19	68	224	263	9.63	13.72
11-Dec-19	56	163	192	10.39	13.44
25-Dec-19	85	163	210	10.19	13.19
10-Jan-20	31	93	144	14.88	15.77
28-Jan-20	54	118	156	16.32	17.57
11-Feb-20	23	258	344	13.21	24.41
27-Feb-20	17	206	248	12.83	17.44
12-Mar-20	21	182	238	7.93	12.39
26-Mar-20	18	123	174	10.2	17.45
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>85</b>	<b>421</b>	<b>536</b>	<b>16.32</b>	<b>30.4</b>
<b>Minimum</b>	<b>15</b>	<b>24</b>	<b>43</b>	<b>5.79</b>	<b>9.19</b>
<b>Average</b>	<b>35.5</b>	<b>167.9</b>	<b>228.2</b>	<b>10.7</b>	<b>16.9</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

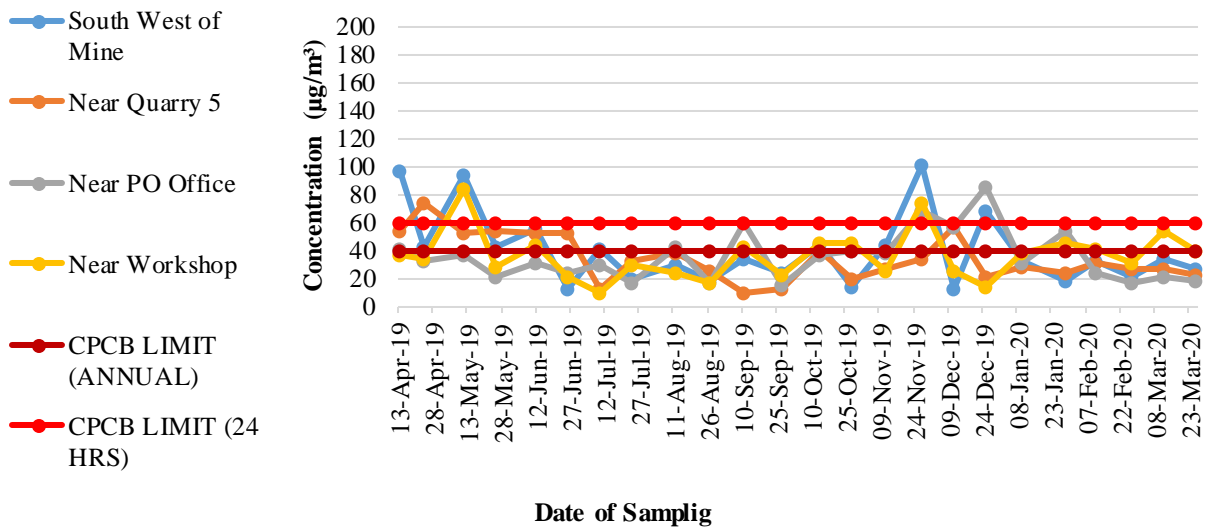
ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:32  
**Area:** Lakhanpur  
**Project:** Belpahar OCP  
**Monitoring Station:** Near Workshop

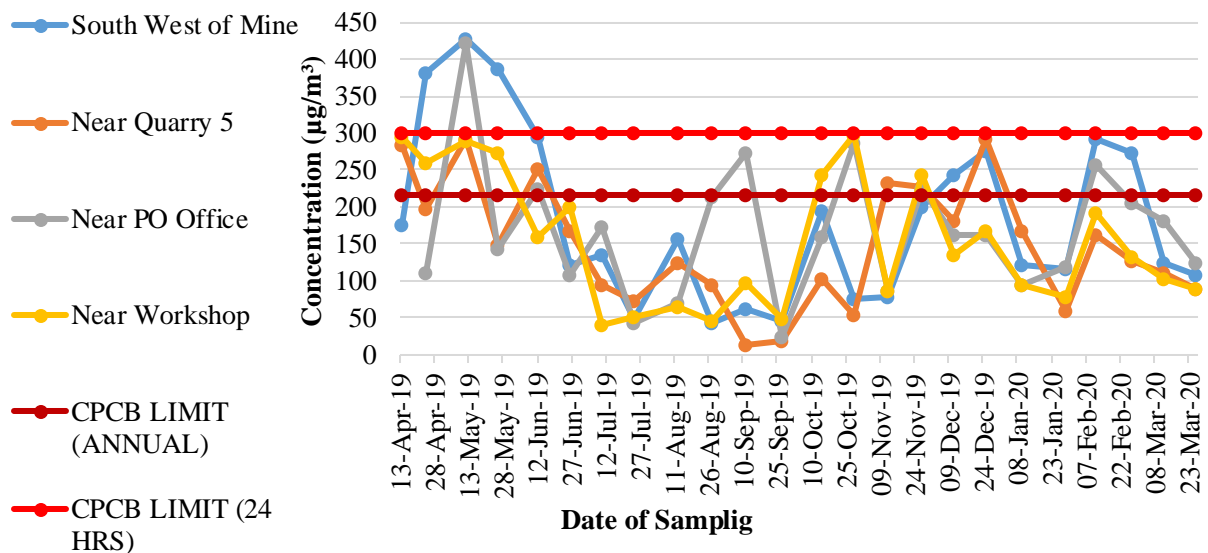
Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
12-Apr-19	37	295	329	13.8	33.21
24-Apr-19	34	260	386	15.45	29.85
11-May-19	83	290	345	15.26	30.36
25-May-19	28	274	347	14.36	21.23
12-Jun-19	44	158	260	12.7	14.1
26-Jun-19	21	199	290	11.15	16.31
10-Jul-19	10	40	84	11.39	10.75
24-Jul-19	30	52	130	11.53	18.44
12-Aug-19	23	65	164	11.65	19.19
27-Aug-19	17	45	121	15.63	13.94
11-Sep-19	42	96	121	10.59	29.01
27-Sep-19	22	48	64	8.78	12.48
14-Oct-19	45	242	252	5.15	15.35
29-Oct-19	45	296	389	9.23	8.43
12-Nov-19	25	87	141	14.14	22.1
27-Nov-19	74	244	278	11.18	11.58
11-Dec-19	25	134	158	12.28	11.04
25-Dec-19	14	166	130	10.11	9.51
10-Jan-20	38	95	135	15.46	16.65
29-Jan-20	45	78	119	16.71	13.49
11-Feb-20	41	192	254	8.11	20.66
27-Feb-20	31	131	164	12.02	11.87
12-Mar-20	54	101	146	10.64	23.22
26-Mar-20	40	90	129	11.04	35.57
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>83</b>	<b>296</b>	<b>389</b>	<b>16.71</b>	<b>35.57</b>
<b>Minimum</b>	<b>10</b>	<b>40</b>	<b>64</b>	<b>5.15</b>	<b>8.43</b>
<b>Average</b>	<b>36.2</b>	<b>153.3</b>	<b>205.7</b>	<b>12.0</b>	<b>18.7</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

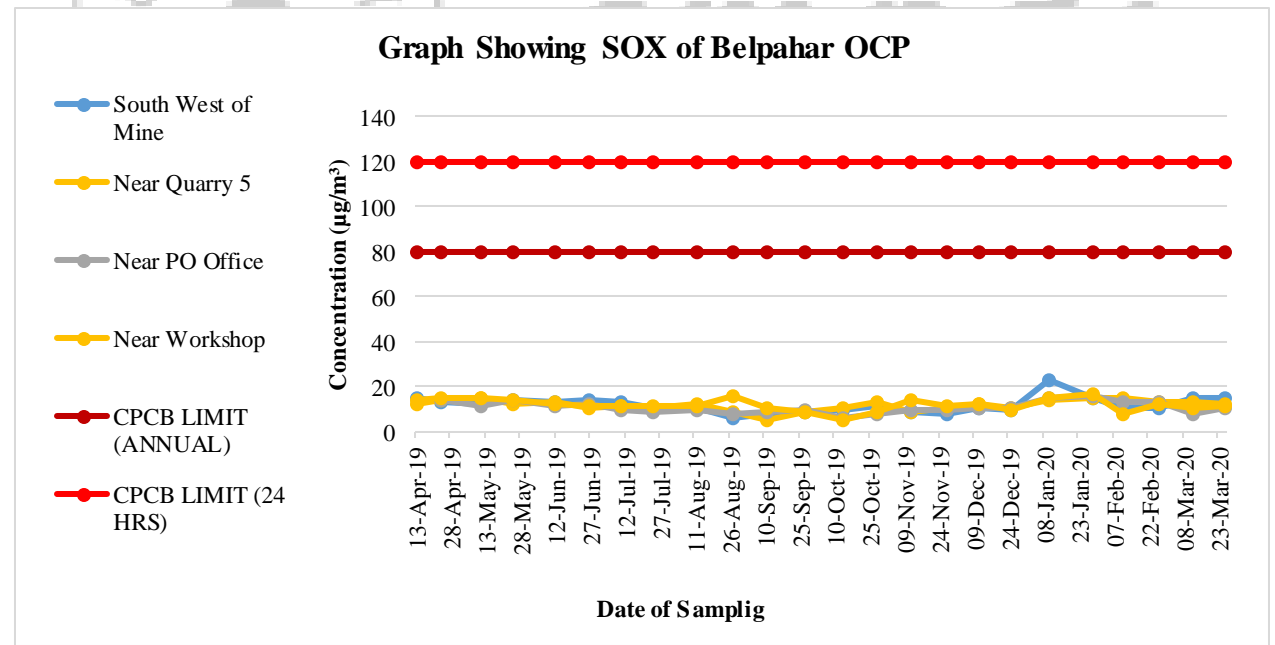
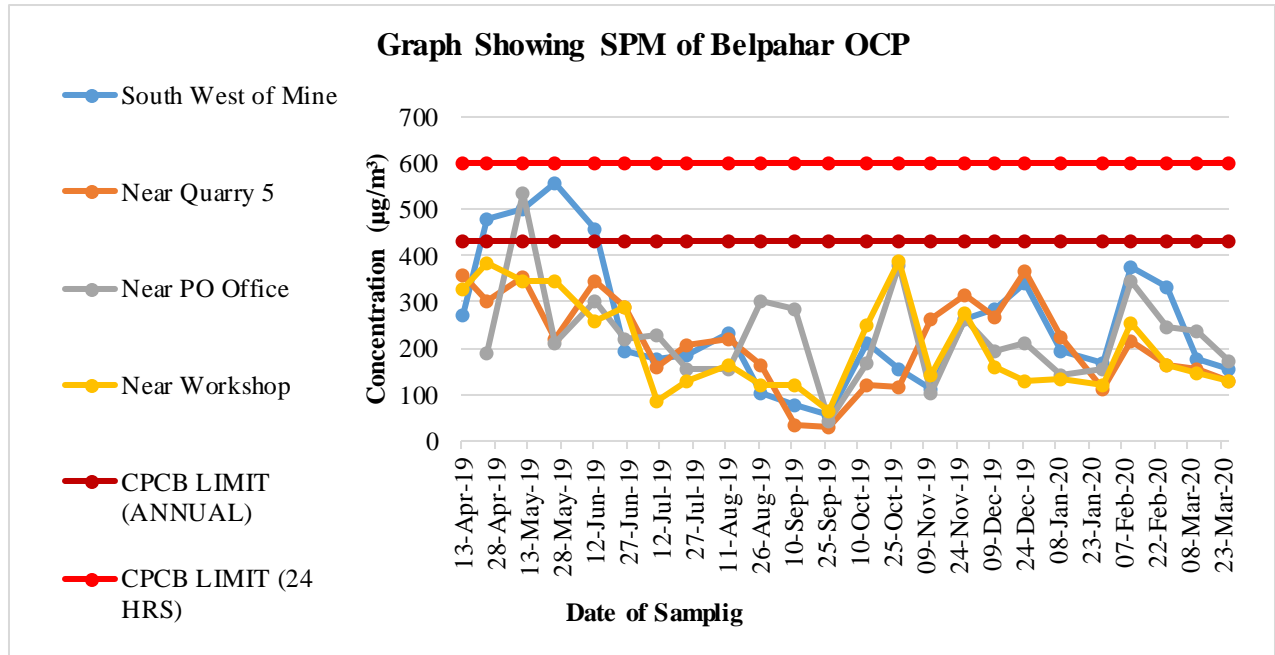
Graph Showing PM2.5 of Belpahar OCP



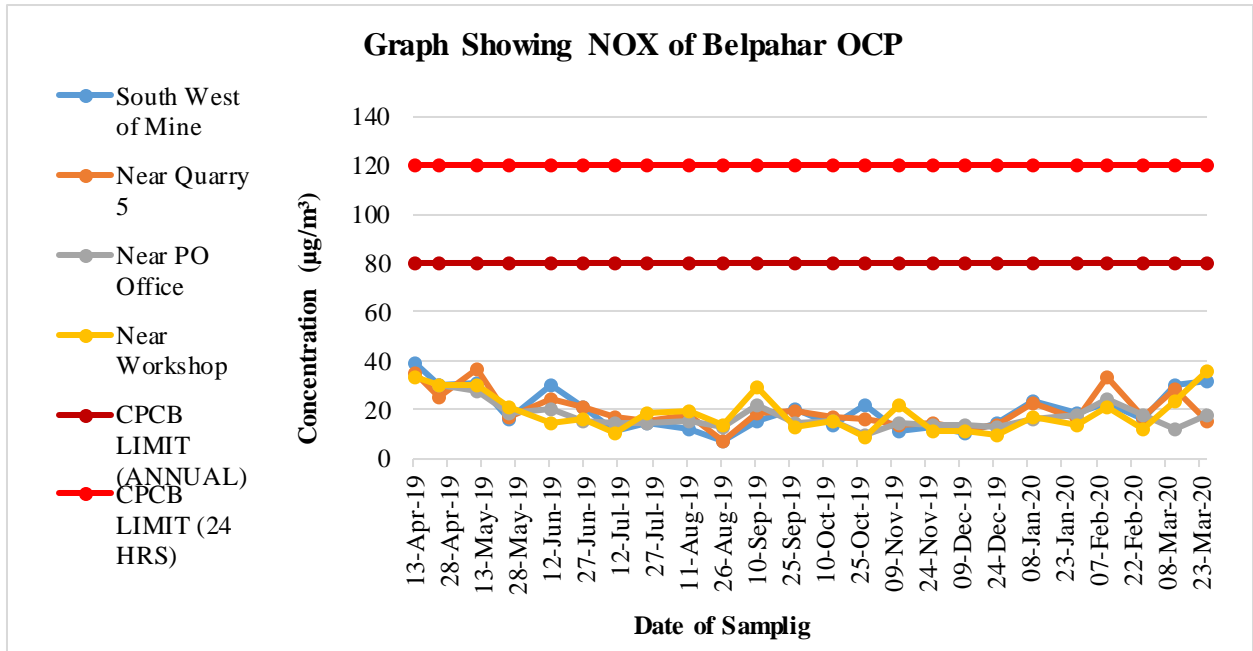
Graph Showing PM10 of Belpahar OCP



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:33

**Area:** Basundhara-Garjanbahal  
**Project:** Kulda OCP  
**Monitoring Station:** External CT Road

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
04-Apr-19	48	251	305	12.07	37.86
16-Apr-19	26	361	467	13.66	22.4
03-May-19	26	117	221	10.49	30.81
16-May-19	138	231	284	14.16	23.91
03-Jun-19	38	170	294	11.73	21.5
17-Jun-19	55	113	294	11.24	15.39
01-Jul-19	29	167	366	11.69	20.6
15-Jul-19	29	150	211	6.92	14.28
01-Aug-19	31	59	114	10.93	12.08
16-Aug-19	27	108	215	5.28	9.42
02-Sep-19	39	90	210	9.96	16.17
16-Sep-19	17	37	70	15.15	17.04
03-Oct-19	56	212	225	9.75	23.69
18-Oct-19	19	141	219	6.66	10.14
02-Nov-19	15	54	89	12.76	17.18
18-Nov-19	25	114	137	8.6	9.21
02-Dec-19	55	237	394	10.36	17.81
16-Dec-19	58	236	288	9.05	18.87
01-Jan-20	15	107	164	17	19.83
18-Jan-20	72	131	211	15.98	27.11
03-Feb-20	35	241	350	10.88	23.94
17-Feb-20	25	211	270	13.36	28.88
12-Mar-20	23	97	196	10.57	24.93
18-Mar-20	20	78	138	12.36	32.51
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>138</b>	<b>361</b>	<b>467</b>	<b>17</b>	<b>37.86</b>
<b>Minimum</b>	<b>15</b>	<b>37</b>	<b>70</b>	<b>5.28</b>	<b>9.21</b>
<b>Average</b>	<b>38.4</b>	<b>154.7</b>	<b>238.8</b>	<b>11.3</b>	<b>20.6</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:34

Area: Basundhara-Garjanbahal

Project: Kulda OCP

Monitoring Station: West of Working face /Near Tumulia

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
17-Jun-19	12	139	290	10.09	15.71
15-Jul-19	31	75	181	11.64	14.71
01-Aug-19	37	68	126	7.99	15.28
16-Aug-19	72	120	232	6.56	7.52
02-Sep-19	30	64	119	16.63	17.1
16-Sep-19	42	118	172	9.96	21.62
03-Oct-19	72	82	102	8.36	13.2
18-Oct-19	13	74	127	8.13	3.91
02-Nov-19	18	80	120	9.54	14.6
22-Nov-19	70	262	312	9.91	12.32
02-Dec-19	26	240	412	13	21.11
16-Dec-19	29	248	306	11.68	13.2
01-Jan-20	13	117	219	16.14	27.38
18-Jan-20	49	186	298	14.86	14.32
03-Feb-20	48	230	298	8.62	29.8
17-Feb-20	56	205	261	13.58	15.97
02-Mar-20	22	143	238	13.25	18.51
18-Mar-20	20	113	184	9.65	28.63
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>72</b>	<b>262</b>	<b>412</b>	<b>16.63</b>	<b>29.8</b>
<b>Minimum</b>	<b>12</b>	<b>64</b>	<b>102</b>	<b>6.56</b>	<b>3.91</b>
<b>Average</b>	<b>36.7</b>	<b>142.4</b>	<b>222.1</b>	<b>11.1</b>	<b>16.9</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:35

**Area:** Basundhara-Garjanbahal

**Project:** Kulda OCP

**Monitoring Station:** South of Working face/Near Karlikachhar

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
04-Apr-19	62	266	380	12.82	32.91
16-Apr-19	88	353	488	12.64	35.02
03-May-19	58	396	499	11.82	32.39
16-May-19	59	413	506	11.69	24.52
03-Jun-19	22	299	354	14.62	15.4
17-Jun-19	15	184	336	11.51	16.45
01-Jul-19	18	88	110	7.58	13.36
15-Jul-19	34	156	178	11.58	16.92
01-Aug-19	28	60	103	6.01	10.73
16-Aug-19	19	58	185	11.32	20.19
02-Sep-19	16	33	96	12.41	15.46
16-Sep-19	No Electricity				
03-Oct-19	No Electricity				
18-Oct-19	11	64	133	11.3	9.53
04-Nov-19	11	247	294	8.9	11.65
22-Nov-19	13	109	167	9.34	14.41
02-Dec-19	10	203	253	11.93	15.43
16-Dec-19	50	239	290	11.02	15.44
01-Jan-20	24	48	135	13.34	22.56
18-Jan-20	22	203	283	16.82	19.62
03-Feb-20	41	238	323	16.21	25.32
17-Feb-20	58	294	367	11.81	17.29
02-Mar-20	32	88	156	15.6	23.94
18-Mar-20	26	80	128	12.15	18.98
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>88</b>	<b>413</b>	<b>506</b>	<b>16.82</b>	<b>35.02</b>
<b>Minimum</b>	<b>10</b>	<b>33</b>	<b>96</b>	<b>6.01</b>	<b>9.53</b>
<b>Average</b>	<b>32.6</b>	<b>187.2</b>	<b>262.0</b>	<b>11.9</b>	<b>19.4</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:36

**Area:** Basundhara-Garjanbahal

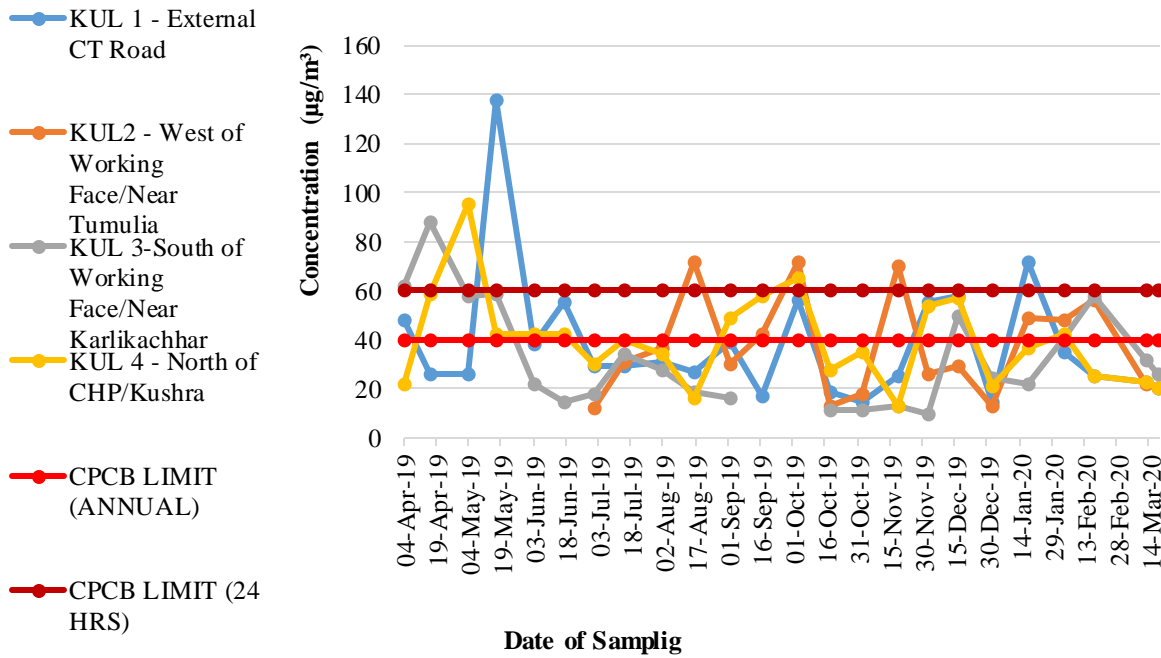
**Project:** Kulda OCP

**Monitoring Station:** North of CHP/ Kushra

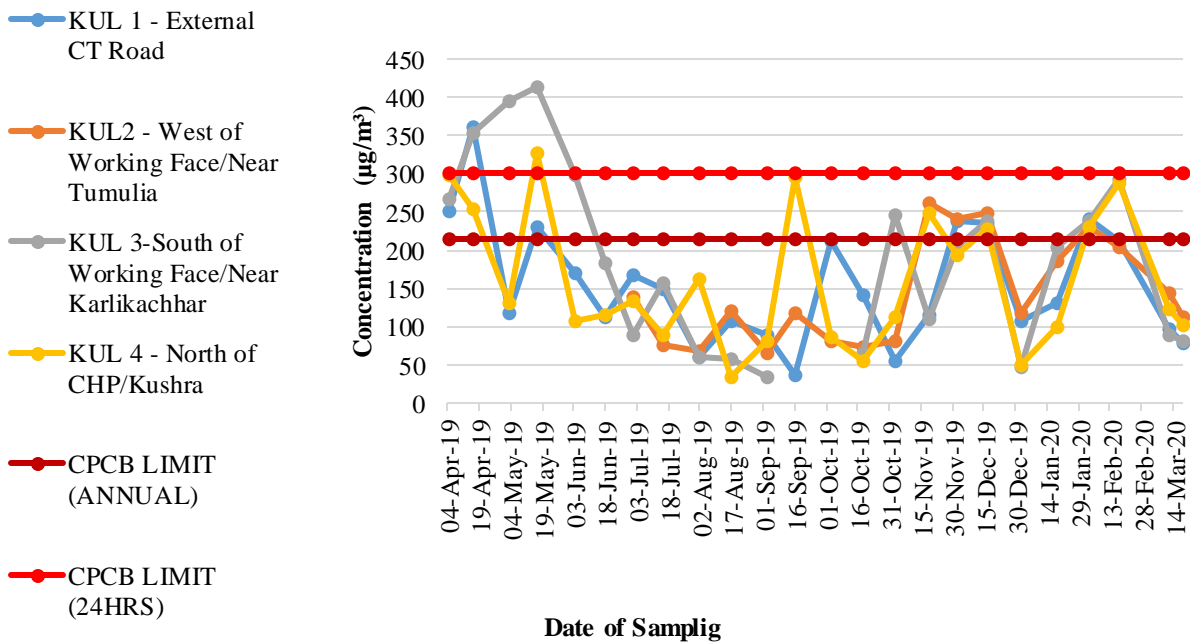
Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
18-Mar-20	20	102	149	11.23	31.33
02-Mar-20	23	123	175	12.06	22.81
17-Feb-20	25	287	344	10.79	16.97
03-Feb-20	42	231	339	9.83	28.59
18-Jan-20	37	100	230	21.27	27.29
01-Jan-20	21	49	163	19.11	28.52
16-Dec-19	57	228	291	10.95	24.27
02-Dec-19	54	194	263	13.96	13.13
18-Nov-19	13	248	288	8.47	20.66
02-Nov-19	35	113	168	8.23	16.17
18-Oct-19	28	56	155	9.74	7.12
03-Oct-19	65	85	108	7.64	10.44
16-Sep-19	58	296	372	8.84	21.2
02-Sep-19	49	80	129	9.66	12.36
16-Aug-19	16	34	76	10.55	18.17
01-Aug-19	34	161	251	10.44	13.97
15-Jul-19	40	89	176	11.9	18.42
01-Jul-19	30	132	285	6.23	18.31
17-Jun-19	42	114	262	13.41	17.14
03-Jun-19	42	108	155	10.96	17.4
17-May-19	42	328	451	15.6	19.9
03-May-19	95	131	198	13.04	18.63
16-Apr-19	59	253	326	13.48	30.23
04-Apr-19	22	297	356	12.71	38.54
<b>Brief Statistics</b>	<b>PM2.5</b>	<b>PM10</b>	<b>SPM</b>	<b>SO2</b>	<b>NOx</b>
<b>Maximum</b>	<b>95</b>	<b>328</b>	<b>451</b>	<b>21.27</b>	<b>38.54</b>
<b>Minimum</b>	<b>13</b>	<b>34</b>	<b>76</b>	<b>6.23</b>	<b>7.12</b>
<b>Average</b>	<b>39.5</b>	<b>160.0</b>	<b>237.9</b>	<b>11.7</b>	<b>20.5</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph Showing PM2.5 of Kulda OCP

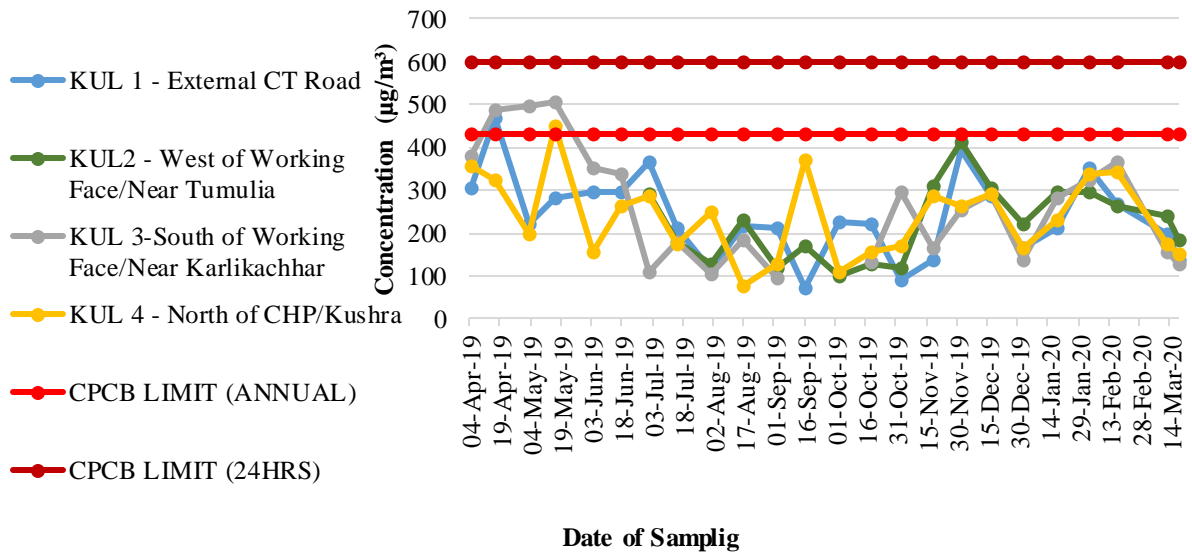


Graph Showing PM10 of Kulda OCP

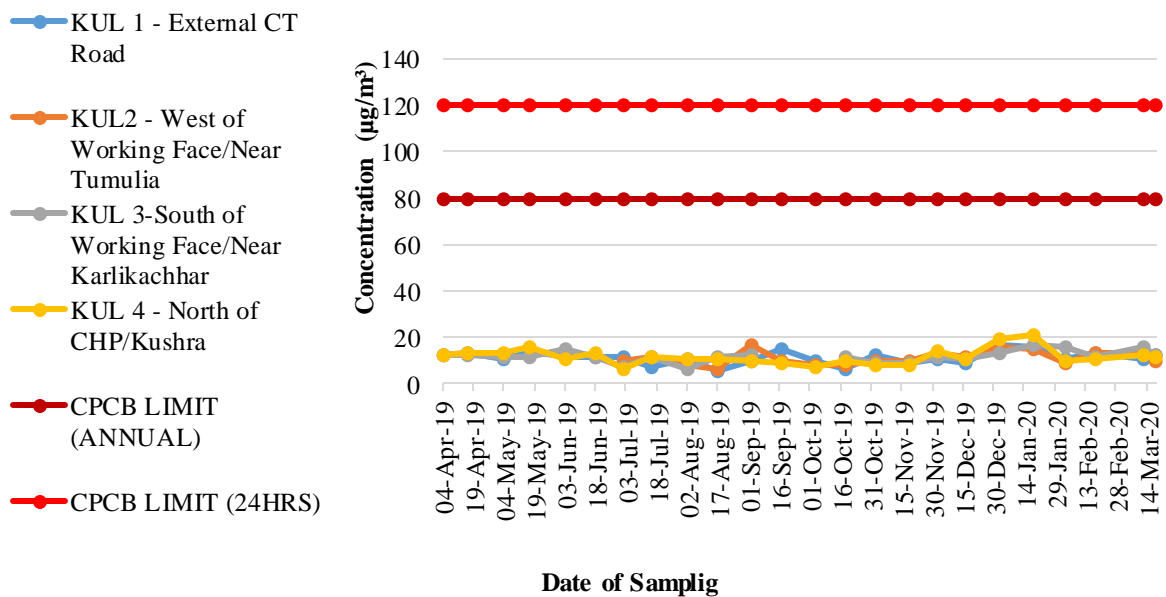


ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

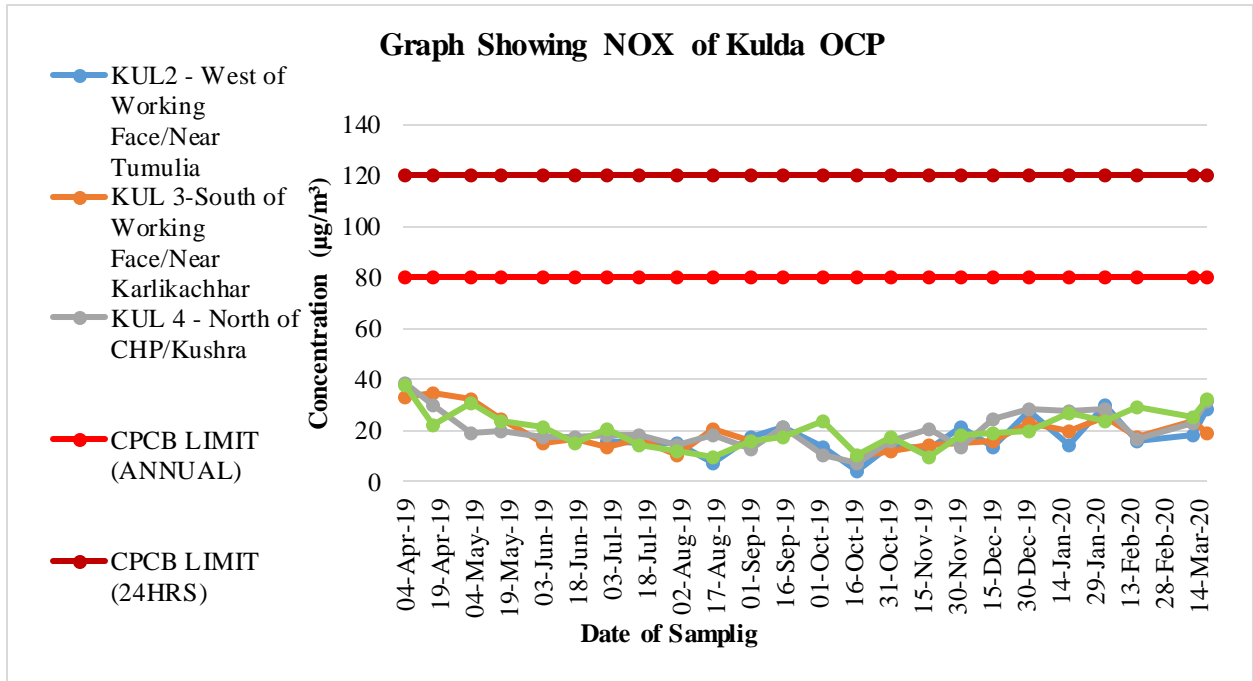
Graph Showing SPM of Kulda OCP



Graph Showing SOX of Kulda OCP



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:37

**Area:** Basundhara-Garjanbahal  
**Project:** Garjanbahal OCP  
**Monitoring Station:** GOCP-1 Kushra

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
04-Apr-19	22	297	356	12.71	38.54
16-Apr-19	59	253	326	13.48	30.23
03-May-19	95	131	198	13.04	18.63
17-May-19	42	328	451	15.6	19.9
03-Jun-19	42	108	155	10.96	17.4
17-Jun-19	42	114	262	13.41	17.14
01-Jul-19	30	132	285	6.23	18.31
15-Jul-19	40	89	176	11.9	18.42
01-Aug-19	34	161	251	10.44	13.97
16-Aug-19	16	34	76	10.55	18.17
02-Sep-19	49	80	129	9.66	12.36
16-Sep-19	58	296	372	8.84	21.2
03-Oct-19	65	85	108	7.64	10.44
18-Oct-19	28	56	155	9.74	7.12
02-Nov-19	35	113	168	8.23	16.17
18-Nov-19	13	248	288	8.47	20.66
02-Dec-19	54	194	263	13.96	13.13
16-Dec-19	57	228	291	10.95	24.27
01-Jan-20	21	49	163	19.11	28.52
18-Jan-20	37	100	230	21.27	27.29
03-Feb-20	42	231	339	9.83	28.59
17-Feb-20	25	287	344	10.79	16.97
02-Mar-20	23	123	175	12.06	22.81
18-Mar-20	20	102	149	11.23	31.33
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>95</b>	<b>328</b>	<b>451</b>	<b>21.27</b>	<b>38.54</b>
<b>Minimum</b>	<b>13</b>	<b>34</b>	<b>76</b>	<b>6.23</b>	<b>7.12</b>
<b>Average</b>	<b>39.5</b>	<b>160.0</b>	<b>237.9</b>	<b>11.7</b>	<b>20.5</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:38

Area: Basundhara-Garjanbahal

Project: Garjan bahal OCP

Monitoring Station: GOCP 2-Karlikachhar

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
04-Apr-19	62	266	380	12.82	32.91
16-Apr-19	88	353	488	12.64	35.02
03-May-19	58	396	499	11.82	32.39
16-May-19	59	413	506	11.69	24.52
03-Jun-19	22	299	354	14.62	15.4
17-Jun-19	15	184	336	11.51	16.45
01-Jul-19	18	88	110	7.58	13.36
15-Jul-19	34	156	178	11.58	16.92
01-Aug-19	28	60	103	6.01	10.73
16-Aug-19	19	58	185	11.32	20.19
02-Sep-19	16	33	96	12.41	15.46
16-Sep-19	NO ELECTRICITY				
03-Oct-19	NO ELECTRICITY				
18-Oct-19	11	64	133	11.3	9.53
04-Nov-19	11	247	294	8.9	11.65
22-Nov-19	13	109	167	9.34	14.41
02-Dec-19	10	203	253	11.93	15.43
16-Dec-19	50	239	290	11.02	15.44
01-Jan-20	24	48	135	13.34	22.56
18-Jan-20	22	203	283	16.82	19.62
03-Feb-20	41	238	323	16.21	25.32
17-Feb-20	58	294	367	11.81	17.29
02-Mar-20	32	88	156	15.6	23.94
18-Mar-20	26	80	128	12.15	18.98
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>88</b>	<b>413</b>	<b>506</b>	<b>16.82</b>	<b>35.02</b>
<b>Minimum</b>	<b>10</b>	<b>33</b>	<b>96</b>	<b>6.01</b>	<b>9.53</b>
<b>Average</b>	<b>32.6</b>	<b>187.2</b>	<b>262.0</b>	<b>11.9</b>	<b>19.4</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:39

**Area:** Basundhara-Garjanbahal

**Project:** Garjanbahal OCP

**Monitoring Station:** GOCP 3 - 220 Kv Substation

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
05-Apr-19	11	284	348	13.45	28.58
19-Apr-19	68	146	211	14.44	33.47
06-May-19	56	479	597	12.13	21.38
20-May-19	34	236	324	12.36	18.27
06-Jun-19	52	173	207	11.65	13
20-Jun-19	10	241	310	10.35	14.17
04-Jul-19	20	128	208	9.43	12.84
18-Jul-19	73	135	233	7.18	10.46
06-Aug-19	37	183	295	6.74	15.78
21-Aug-19	16	46	102	5.17	6.16
05-Sep-19	28	99	153	7.85	13.55
20-Sep-19	34	90	128	7.92	16.08
09-Oct-19	32	196	231	7.64	8.86
23-Oct-19	15	451	512	6.75	8.23
11-Nov-19	24	129	156	7.48	11.45
21-Nov-19	30	274	351	6.77	9.97
05-Dec-19	22	130	182	7.42	14.05
19-Dec-19	15	91	127	8.64	11.56
06-Jan-20	17	70	103	16.96	13.19
22-Jan-20	73	619	681	8.52	9.94
06-Feb-20	51	245	324	10.32	29.51
20-Feb-20	36	221	262	7.83	10.53
05-Mar-20	28	247	301	12.3	9.7
21-Mar-20	23	168	218	11.01	12.56
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>73</b>	<b>619</b>	<b>681</b>	<b>16.96</b>	<b>33.47</b>
<b>Minimum</b>	<b>10</b>	<b>46</b>	<b>102</b>	<b>5.17</b>	<b>6.16</b>
<b>Average</b>	<b>33.5</b>	<b>211.7</b>	<b>273.5</b>	<b>9.6</b>	<b>14.7</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:40

**Area:** Basundhara-Garjanbahal  
**Project:** Garjanbahal OCP  
**Monitoring Station:** GOCP 4 Barpali

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
01-Jul-19	29	167	366	11.69	20.6
15-Jul-19	29	150	211	6.92	14.28
01-Aug-19	31	59	114	10.93	12.08
16-Aug-19	27	108	215	8.44	11.3
02-Sep-19	39	90	210	9.96	16.17
16-Sep-19	17	37	70	15.15	17.04
03-Oct-19	56	212	225	9.75	12.83
18-Oct-19	19	141	219	6.66	10.14
02-Nov-19	15	54	89	12.76	17.8
18-Nov-19	25	114	137	8.6	9.21
02-Dec-19	55	237	394	10.36	11.81
16-Dec-19	58	236	288	9.05	18.87
01-Jan-20	15	107	164	17	19.83
18-Jan-20	72	131	211	15.98	29.65
03-Feb-20	35	241	350	10.88	23.94
17-Feb-20	25	211	270	13.36	28.88
12-Mar-20	23	97	196	10.57	24.93
18-Mar-20	18	89	151	15.3	25.63
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>72</b>	<b>241</b>	<b>394</b>	<b>17</b>	<b>29.65</b>
<b>Minimum</b>	<b>15</b>	<b>37</b>	<b>70</b>	<b>6.66</b>	<b>9.21</b>
<b>Average</b>	<b>32.7</b>	<b>137.8</b>	<b>215.6</b>	<b>11.3</b>	<b>18.1</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:41

**Area:** Basundhara-Garjanbahal

**Project:** Garjanbahal OCP

**Monitoring Station:** GOCP 5- Duduka Village

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
12-Apr-19	35	294	350	11.12	38.05
19-Apr-19	13	109	219	11.58	33.03
06-May-19	87	187	280	12.07	33.85
20-May-19	38	346	495	11.01	22.16
05-Jun-19	55	296	556	11.95	28.8
19-Jun-19	23	113	268	13.62	16.83
03-Jul-19	15	78	213	10.69	11.99
17-Jul-19	56	140	169	7.82	17.03
05-Aug-19	48	243	278	8.43	13.47
20-Aug-19	33	343	408	9.28	12.88
04-Sep-19	53	339	462	8.79	20.51
19-Sep-19	42	130	155	12.16	28.89
04-Oct-19	38	164	202	14.08	14.36
22-Oct-19	32	261	340	8.9	18.06
11-Nov-19	53	669	763	12.02	14.56
20-Nov-19	22	287	334	9.6	16.16
04-Dec-19	26	126	152	15.44	23.6
18-Dec-19	14	60	102	10.49	16.04
03-Jan-20	12	163	283	14.27	22.46
21-Jan-20	53	127	251	17.21	21.9
05-Feb-20	33	187	246	8.21	27.75
20-Feb-20	24	152	188	12.18	19.32
04-Mar-20	17	95	128	11.9	16.45
20-Mar-20	15	82	110	10.24	18.4
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>87</b>	<b>669</b>	<b>763</b>	<b>17.21</b>	<b>38.05</b>
<b>Minimum</b>	<b>12</b>	<b>60</b>	<b>102</b>	<b>7.82</b>	<b>11.99</b>
<b>Average</b>	<b>34.9</b>	<b>208.0</b>	<b>289.7</b>	<b>11.4</b>	<b>21.1</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:42

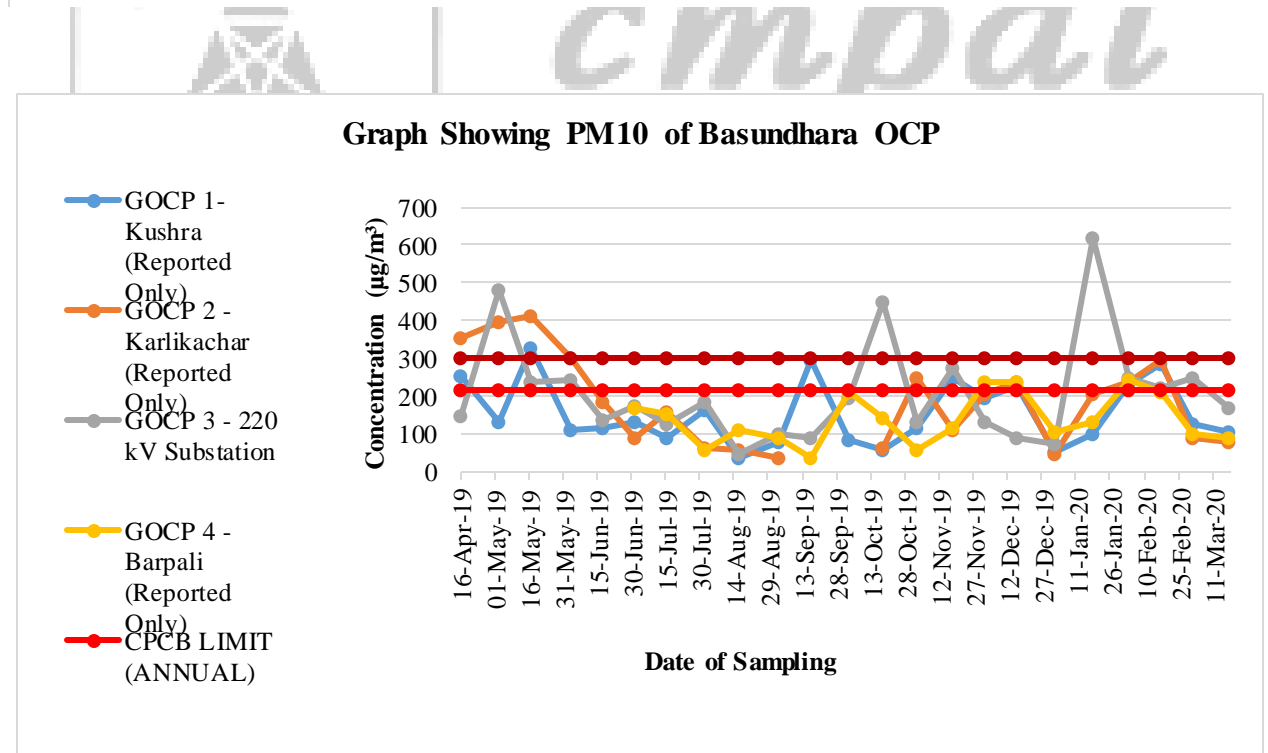
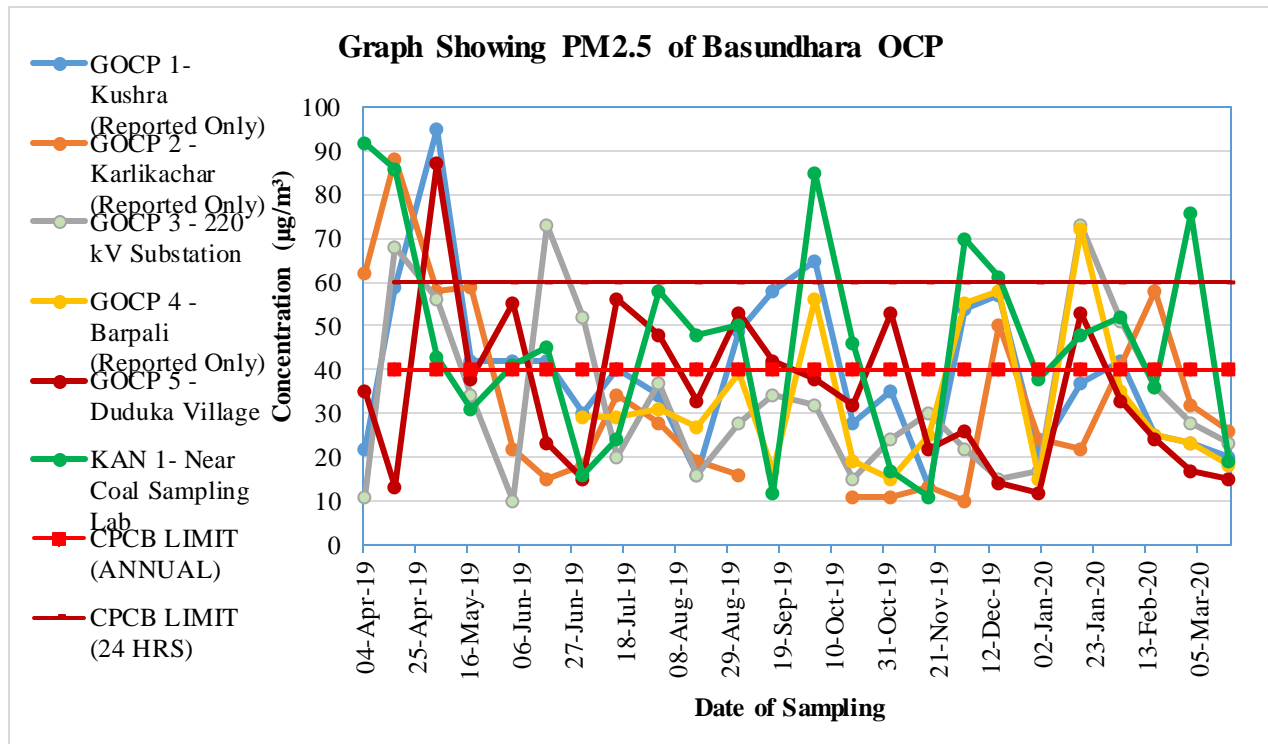
Area: Basundhara-Garjanbahal

Project: Garjanbahal OCP

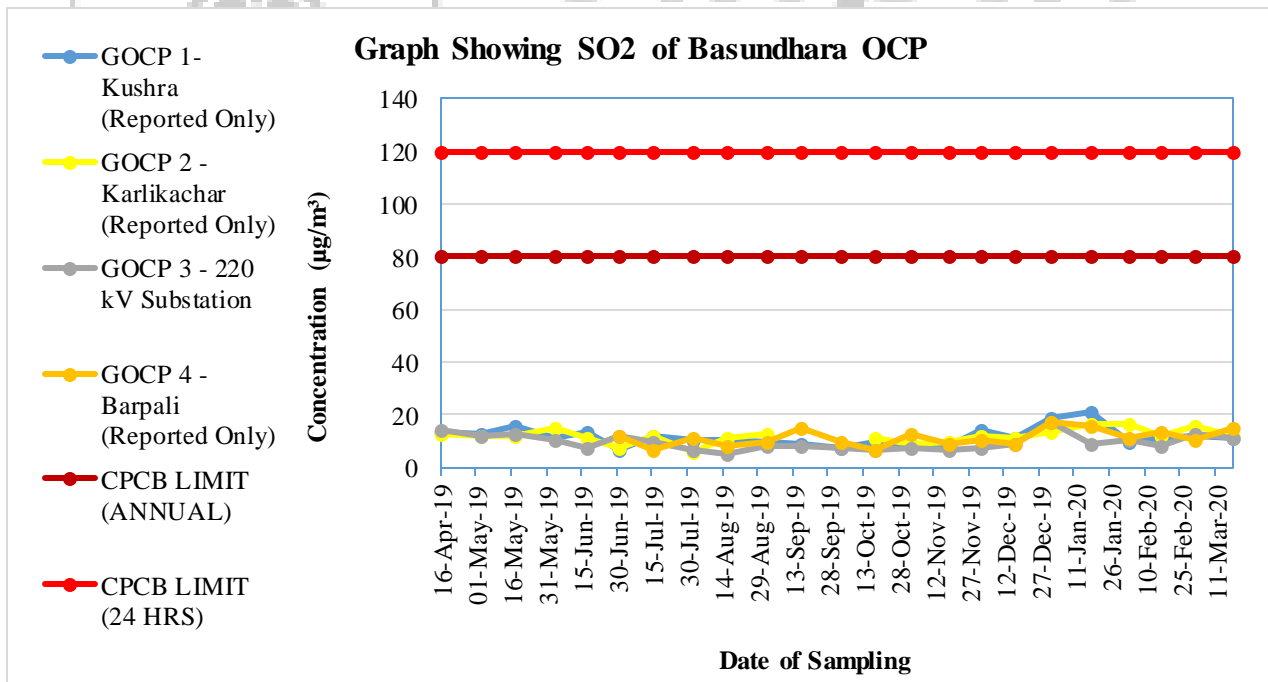
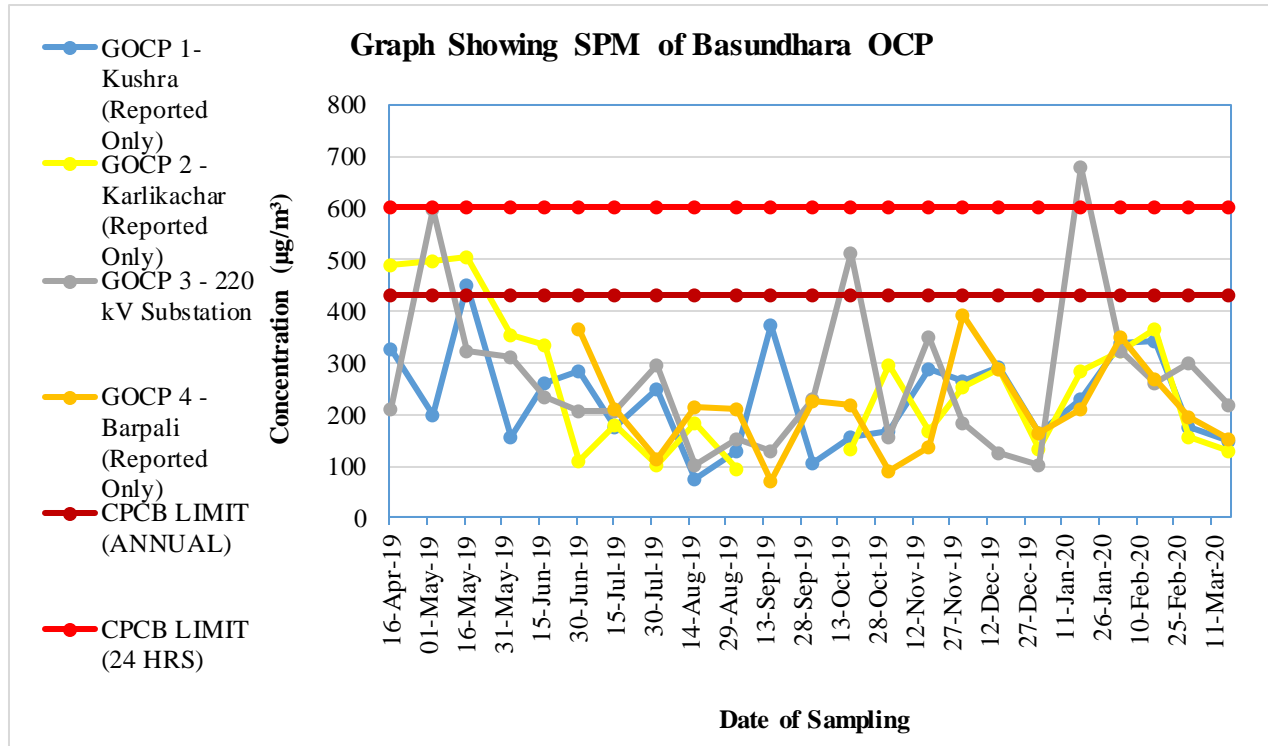
Monitoring Station: KAN 1- Near Coal Sampling Lab

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
08-Apr-19	92	242	308	13.29	33.17
19-Apr-19	86	236	324	11.21	35.49
07-May-19	43	487	569	14.98	24.26
20-May-19	31	129	234	12.26	17.61
06-Jun-19	76	371	519	12.79	13.3
06-Jun-19	76	371	519	12.79	13.3
20-Jun-19	41	148	308	15.01	11.72
04-Jul-19	19	109	244	9.58	12.91
18-Jul-19	45	238	268	10.38	14.19
06-Aug-19	16	48	77	10.75	12.21
21-Aug-19	24	202	277	7.78	11.11
05-Sep-19	58	228	257	7.04	16.89
20-Sep-19	48	261	281	9.88	13.54
09-Oct-19	50	180	204	9.42	9.36
23-Oct-19	12	185	250	6.03	16.15
11-Nov-19	85	138	190	11.02	10.12
21-Nov-19	46	164	306	10.98	15.84
05-Dec-19	17	229	265	11.53	16.27
19-Dec-19	11	176	208	12.69	16.62
06-Jan-20	70	111	197	15.44	13.5
22-Jan-20	61	236	309	19.06	20.64
06-Feb-20	38	223	297	12.41	34.17
20-Feb-20	48	204	234	14.7	20.34
05-Mar-20	52	119	165	8.78	11.5
21-Mar-20	36	97	144	12.67	13.16
Brief Statistics	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>
Maximum	<b>92</b>	<b>487</b>	<b>569</b>	<b>19.06</b>	<b>35.49</b>
Minimum	<b>11</b>	<b>48</b>	<b>77</b>	<b>6.03</b>	<b>9.36</b>
Average	<b>46.0</b>	<b>198.4</b>	<b>268.1</b>	<b>11.7</b>	<b>17.3</b>
Standard (24 Hrs)	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
Standard (Annual)	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:43

**Area:** Basundhara-Garjanbahal

**Project:** Basundhara (w) OCP

**Monitoring Station:** A1- Near Internal Dump & CT Road of Basundhara (W)OCP/Siarmal

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
05-Apr-19	73	438	524	14.15	36.72
18-Apr-19	52	295	340	10.97	34.4
04-May-19	63	436	586	13.21	38.34
18-May-19	49	263	360	11.91	18.37
04-Jun-19	54	135	218	11.98	15.4
18-Jun-19	55	123	269	10.9	14.92
02-Jul-19	24	77	106	7.19	9.05
16-Jul-19	15	105	164	9.06	12.82
02-Aug-19	66	129	179	10.51	11.93
17-Aug-19	15	37	99	9.09	10.81
03-Sep-19	23	54	67	8.81	24.15
18-Sep-19	21	34	61	9.25	8.45
04-Oct-19	29	116	138	12.15	8.86
21-Oct-19	30	113	169	8.94	9.07
05-Nov-19	70	330	370	13.38	12.76
18-Nov-19	13	296	338	7	9.43
03-Dec-19	42	244	296	14.1	14.37
17-Dec-19	55	113	142	6.37	19.49
02-Jan-20	11	139	183	17.3	24.51
20-Jan-20	52	127	246	10.12	25.19
04-Feb-20	54	234	342	9.94	26.75
18-Feb-20	39	291	406	8.62	26.31
03-Mar-20	26	88	153	13.91	10.41
19-Mar-20	21	81	117	11.59	12.07
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>73</b>	<b>438</b>	<b>586</b>	<b>17.3</b>	<b>38.34</b>
<b>Minimum</b>	<b>11</b>	<b>34</b>	<b>61</b>	<b>6.37</b>	<b>8.45</b>
<b>Average</b>	<b>39.7</b>	<b>179.1</b>	<b>244.7</b>	<b>10.9</b>	<b>18.1</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:44

**Area:** Basundhara-Garjanbahal

**Project:** Basundhara (W)OCP

**Monitoring Station:** A2- Near Internal Dump & CT Road of Basundhara (W)OCP/  
Gopalpur

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
06-Apr-19	18	244	414	10.35	28.48
17-Apr-19	48	381	479	14.64	33.38
03-May-19	130	297	528	10.8	36.71
17-May-19	47	391	548	10.35	15.75
04-Jun-19	48	251	312	11.59	16.7
18-Jun-19	17	144	284	13.08	18.27
02-Jul-19	34	48	154	9.78	12.07
16-Jul-19	38	122	168	8.8	12.11
02-Aug-19	30	66	173	9.2	10.95
17-Aug-19	51	165	248	5.97	8.53
03-Sep-19	30	75	140	10.05	13.35
18-Sep-19	25	51	79	7.81	16.17
03-Oct-19	28	99	140	10.25	8.49
21-Oct-19	60	154	198	6.49	7.91
04-Nov-19	19	221	296	7.43	12.5
18-Nov-19	58	261	318	5.69	8.21
03-Dec-19	17	234	287	8.07	16.82
17-Dec-19	44	171	217	6.73	19.12
02-Jan-20	21	235	297	15.04	17.54
20-Jan-20	17	114	193	8.43	19.65
04-Feb-20	43	203	260	7.91	25.31
18-Feb-20	52	160	195	6.9	19.39
03-Mar-20	31	259	305	9.54	11.59
19-Mar-20	27	147	191	9.63	14.32
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>130</b>	<b>391</b>	<b>548</b>	<b>15.04</b>	<b>36.71</b>
<b>Minimum</b>	<b>17</b>	<b>48</b>	<b>79</b>	<b>5.69</b>	<b>7.91</b>
<b>Average</b>	<b>38.9</b>	<b>187.2</b>	<b>267.7</b>	<b>9.4</b>	<b>16.8</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:45

**Area:** Basundhara-Garjanbahal

**Project:** Basundhara (W)OCP

**Monitoring Station:** A3- Near Sardega Railway Siding

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
05-Apr-19	21	231	435	14.9	31.86
18-Apr-19	54	369	456	14.01	35.51
04-May-19	87	277	395	14.42	29.65
18-May-19	57	185	287	12.03	23.96
04-Jun-19	73	415	567	12.79	20.2
18-Jun-19	48	127	315	11.77	18.41
02-Jul-19	80	91	208	9.53	11.86
16-Jul-19	45	516	558	11.08	14.48
02-Aug-19	80	112	181	6.25	8.58
17-Aug-19	29	73	158	7.19	6.91
03-Sep-19	25	56	101	6.85	14.3
18-Sep-19	15	28	41	14.48	20.57
04-Oct-19	38	233	243	15.52	10.61
21-Oct-19	17	92	157	5.88	4.13
04-Nov-19	64	71	96	12.29	11.64
19-Nov-19	18	189	255	10.88	13.22
03-Dec-19	21	230	297	9.22	14.09
17-Dec-19	55	142	201	9.14	10.09
02-Jan-20	28	126	203	13.88	18.75
20-Jan-20	31	110	210	14.22	13.82
04-Feb-20	52	217	311	14.43	31.4
18-Feb-20	44	233	272	10.9	12.25
03-Mar-20	27	165	247	13.17	12.88
19-Mar-20	22	128	159	13.09	12.35
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
Maximum	87	516	567	15.52	35.51
Minimum	15	28	41	5.88	4.13
Average	43.0	184.0	264.7	11.6	16.7
Standard (24 Hrs)	60	300	600	120	120
Standard (Annual)	40	215	430	80	80

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:46

**Area:** Basundhara-Garjanbahal

**Project:** Basundhara (W)OCP

**Monitoring Station:** A4- Sardega Siding and Coal Stocks

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
06-Apr-19	22	137	228	12.22	37.83
17-Apr-19	35	132	229	10.37	24.63
06-May-19	26	247	400	10.92	35.01
17-May-19	93	401	551	12.93	21.84
04-Jun-19	48	207	423	10.53	21.4
18-Jun-19	31	114	197	10.4	12.4
02-Jul-19	14	25	107	12.87	15.88
16-Jul-19	34	172	241	9.11	19.13
02-Aug-19	40	93	189	14.38	17.77
17-Aug-19	49	245	319	7.92	12.36
03-Sep-19	39	170	201	6.23	18.63
18-Sep-19	16	25	47	5.51	12.09
03-Oct-19	40	281	318	9.78	13.86
21-Oct-19	17	113	164	8.38	11.48
05-Nov-19	22	56	97	11.39	17.11
19-Nov-19	58	230	305	14.55	13.71
03-Dec-19	56	237	289	17.56	14.91
17-Dec-19	42	102	145	9.19	19.1
02-Jan-20	12	65	114	14.6	24.76
20-Jan-20	40	121	191	18.86	31.67
04-Feb-20	72	226	336	9.17	33.32
18-Feb-20	96	180	233	13	28.32
03-Mar-20	20	269	356	13.36	12.06
19-Mar-20	18	141	198	11.98	16.59
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>96</b>	<b>401</b>	<b>551</b>	<b>18.86</b>	<b>37.83</b>
<b>Minimum</b>	<b>12</b>	<b>25</b>	<b>47</b>	<b>5.51</b>	<b>11.48</b>
<b>Average</b>	<b>39.2</b>	<b>166.2</b>	<b>244.9</b>	<b>11.5</b>	<b>20.2</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:47

**Area:** Basundhara-Garjanbahal

**Project:** Basundhara (W)OCP

**Monitoring Station:** A5- Near Coal stock of Basundhara (w) OCP

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
20-Mar-20	34	151	187	15.57	14.99
04-Mar-20	45	237	323	9.72	12.93
19-Feb-20	48	293	357	10.21	15.89
05-Feb-20	52	239	368	8.99	23.32
21-Jan-20	15	90	180	13.58	17.59
03-Jan-20	25	174	215	12.53	31.81
18-Dec-19	58	177	244	9.33	14.26
04-Dec-19	34	182	205	12.11	18.51
19-Nov-19	25	203	376	15.29	25.73
05-Nov-19	26	212	265	11.15	13.65
22-Oct-19	29	63	173	10.04	13.34
04-Oct-19	42	251	293	10.92	14.47
19-Sep-19	12	23	33	5.52	8.4
04-Sep-19	27	64	80	8.8	13.4
20-Aug-19	33	57	131	7.75	15.55
05-Aug-19	26	156	216	11.76	10.49
17-Jul-19	18	90	160	6.31	11.16
03-Jul-19	20	131	221	7.01	11.23
19-Jun-19	32	131	247	14.27	14.33
05-Jun-19	31	130	251	12.18	26.9
18-May-19	47	350	435	11.71	18.92
04-May-19	64	149	287	12.71	30.24
18-Apr-19	48	138	214	13.38	34.33
06-Apr-19	77	270	412	10	17
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
Maximum	77	350	435	15.57	34.33
Minimum	12	23	33	5.52	8.4
Average	36.2	165.0	244.7	10.9	17.9
Standard (24 Hrs)	60	300	600	120	120
Standard (Annual)	40	215	430	80	80

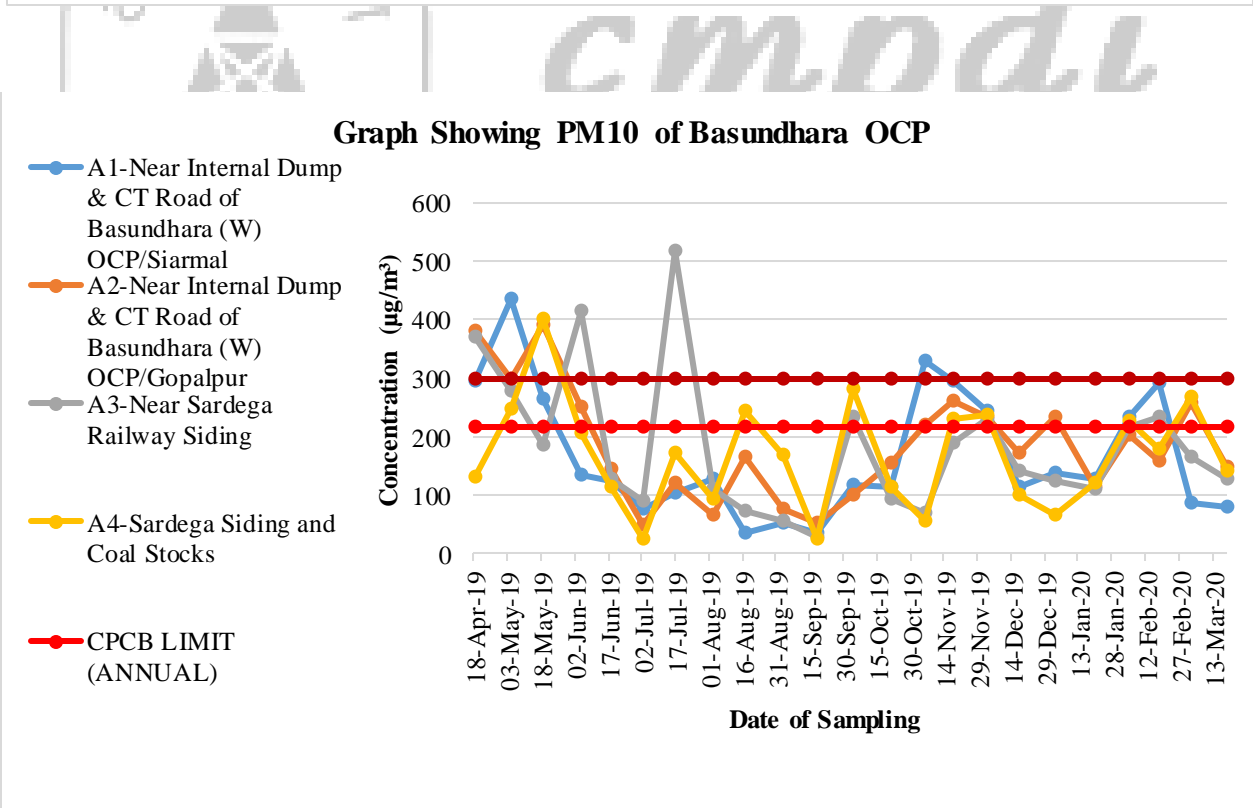
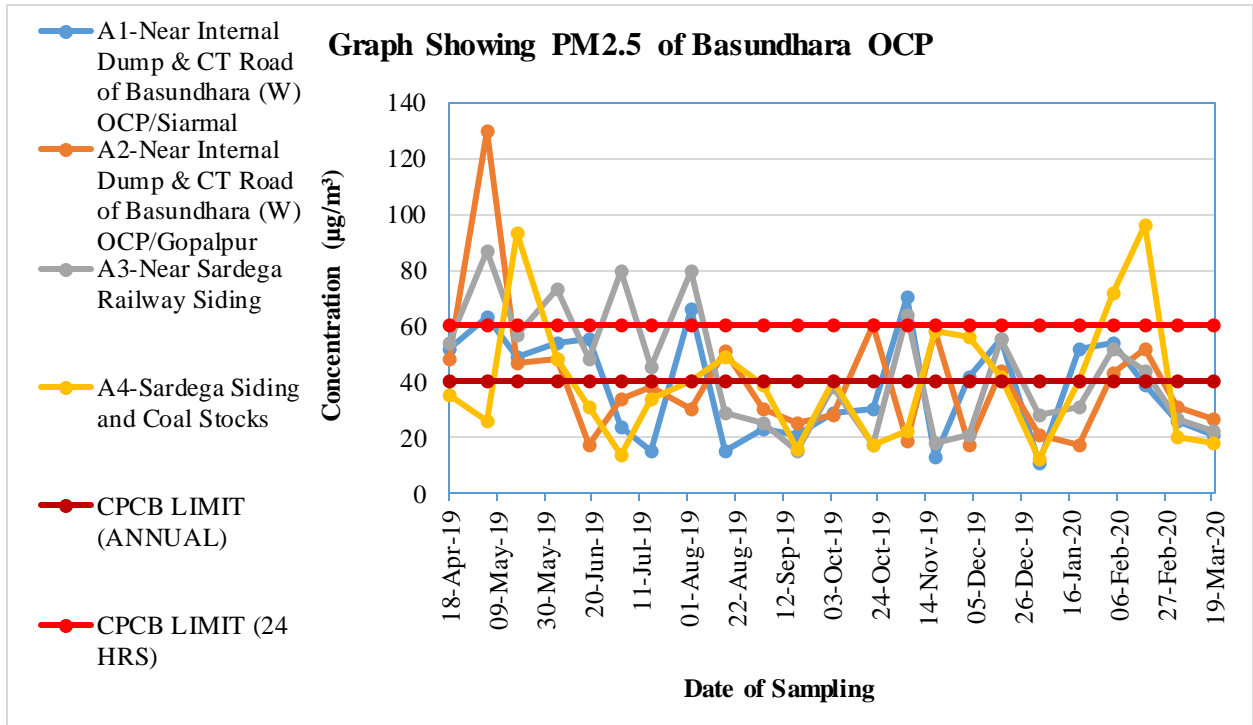
ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:48

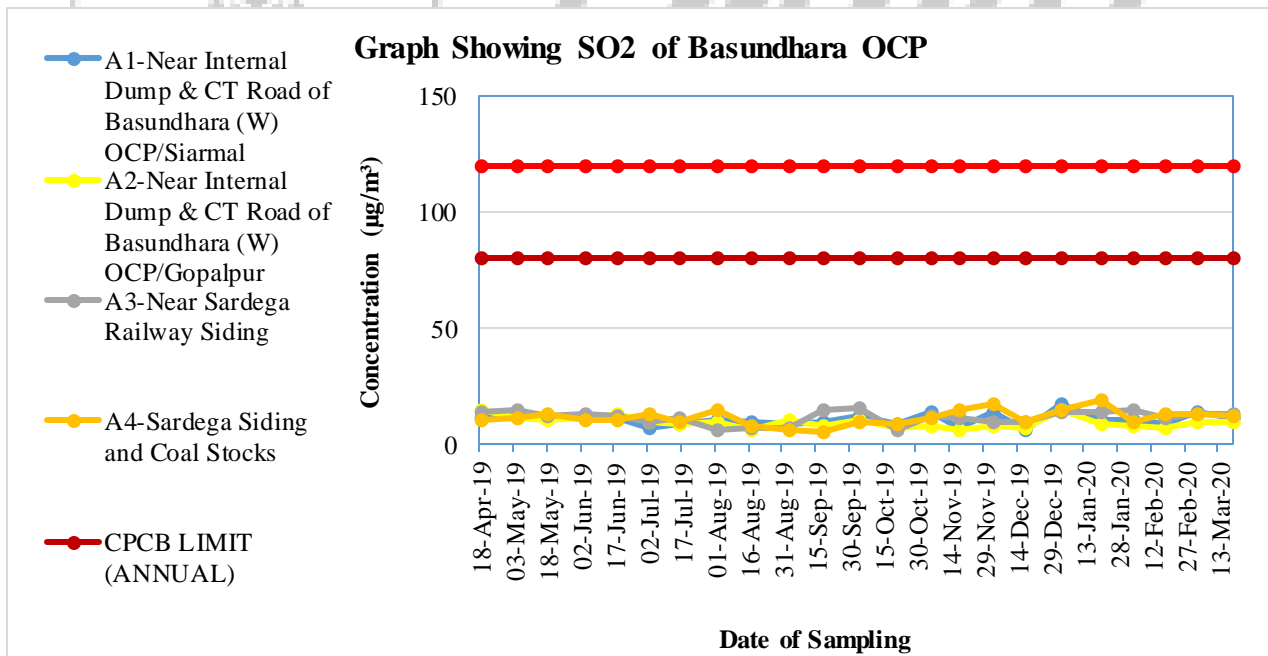
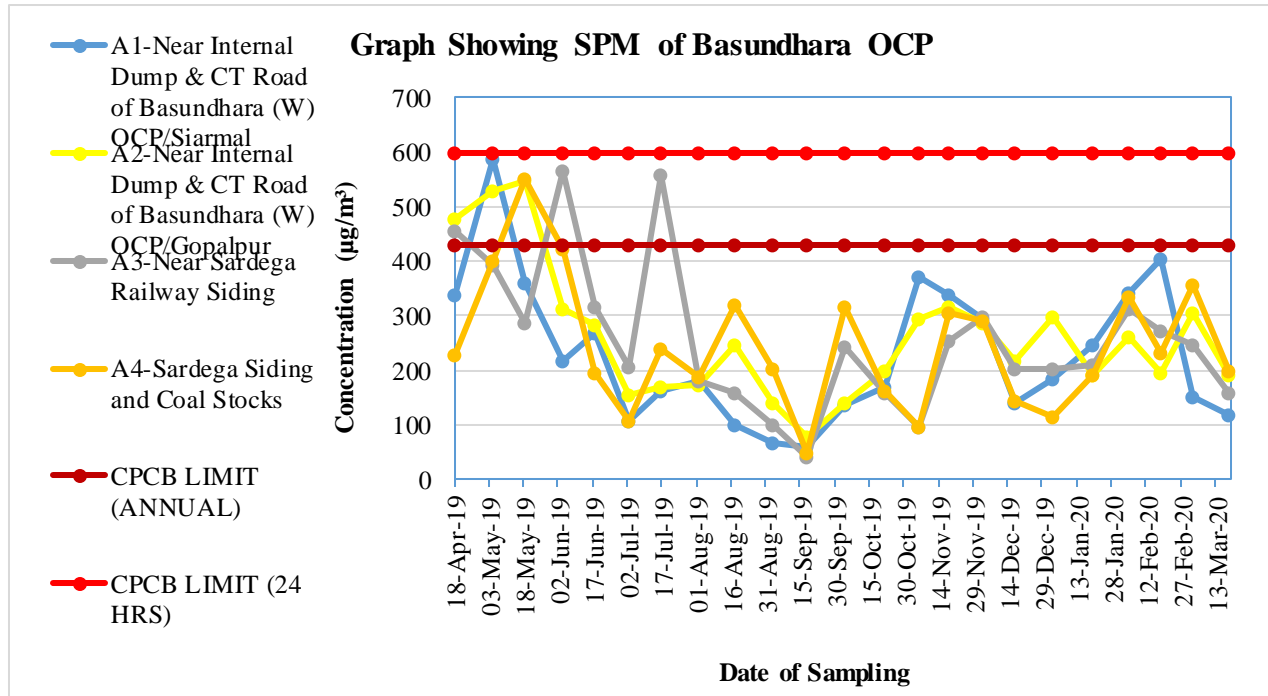
**Area:** Basundhara-Garjanbahal  
**Project:** Basundhara (W)OCP  
**Monitoring Station:** A6- CHP, CT Road

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
06-Apr-19	41	442	567	11	36
18-Apr-19	46	125	205	14.03	31.46
06-May-19	48	101	194	11.67	34.59
16-May-19	34	110	187	13.62	17.38
05-Jun-19	68	170	245	10.65	33.4
19-Jun-19	27	244	380	12.44	15.37
03-Jul-19	15	33	169	8.74	9.24
17-Jul-19	21	68	95	11.33	17.31
05-Aug-19	31	59	151	9.77	13.47
20-Aug-19	23	124	266	9.13	15.43
04-Sep-19	31	50	82	10.04	15.29
19-Sep-19	22	66	93	6.53	10.1
04-Oct-19	35	45	65	9.87	10.41
22-Oct-19	12	67	169	9.34	14.38
05-Nov-19	74	161	213	9.3	26.37
19-Nov-19	19	258	300	7.46	11.3
04-Dec-19	16	70	109	10.68	18.84
18-Dec-19	70	242	290	8.99	12.37
03-Jan-20	53	191	229	10.31	18.39
21-Jan-20	41	281	423	13.76	16.05
05-Feb-20	28	207	298	12.6	33.91
19-Feb-20	20	233	281	9.99	14.14
04-Mar-20	21	86	158	14.1	23.85
20-Mar-20	18	79	107	14.41	31.29
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
Maximum	74	442	567	14.41	36
Minimum	12	33	65	6.53	9.24
Average	33.9	146.3	219.8	10.8	20.0
Standard (24 Hrs)	60	300	600	120	120
Standard (Annual)	40	215	430	80	80

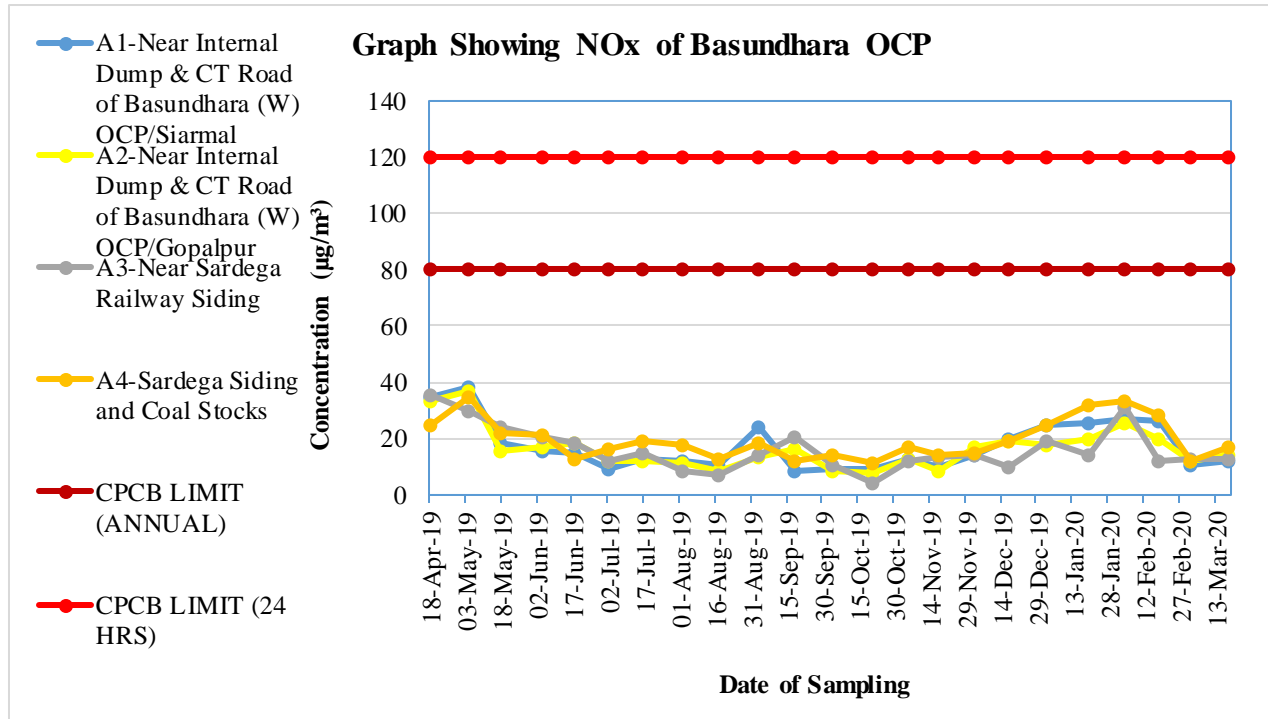
ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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Table:49  
**Area:** Orient  
**Project:** Orient Mine No. 2  
**Monitoring Station:** Orient Mine No. 2

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
09-Apr-19	16	229	279	12.15	31.18
20-Apr-19	72	280	362	14.25	25.95
08-May-19	116	197	358	12.41	33.08
21-May-19	36	349	409	11.18	11.44
07-Jun-19	55	198	241	12.37	12.6
21-Jun-19	36	164	266	13.6	12.72
05-Jul-19	52	101	173	8.41	11.53
19-Jul-19	41	103	147	9.49	11.18
07-Aug-19	42	73	148	7.82	10.28
06-Sep-19	45	202	295	6.17	12.79
23-Sep-19	32	100	121	8.82	12.08
10-Oct-19	23	351	423	14.7	12.17
25-Oct-19	28	85	122	7.55	9.2
08-Nov-19	43	86	91	9.11	11.15
25-Nov-19	26	156	177	7.12	10.9
06-Dec-19	50	152	190	8.61	10.42
20-Dec-19	14	260	337	11.87	16.5
07-Jan-20	30	262	329	14.99	24.21
23-Jan-20	26	172	298	13.11	15.3
07-Feb-20	31	257	345	7.92	22.83
22-Feb-20	28	279	320	11.16	16.09
06-Mar-20	24	259	368	11.44	20.74
23-Mar-20	20	163	208	11.82	24.43
<b>Brief Statistics</b>	<b>PM2.5</b>	<b>PM10</b>	<b>SPM</b>	<b>SO2</b>	<b>NOx</b>
<b>Maximum</b>	<b>116</b>	<b>351</b>	<b>423</b>	<b>14.99</b>	<b>33.08</b>
<b>Minimum</b>	<b>14</b>	<b>73</b>	<b>91</b>	<b>6.17</b>	<b>#REF!</b>
<b>Average</b>	<b>38.52174</b>	<b>194.6957</b>	<b>261.1739</b>	<b>10.6987</b>	<b>16.46826</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:50

Area: Orient

Project: Orient Mine No. 2

Monitoring Station: Near Adarsh Nagar Colony

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
09-Apr-19	84	144	218	14.48	31.33
20-Apr-19	41	384	464	13.81	28.68
08-May-19	73	425	528	11.28	29.82
21-May-19	22	227	285	12.15	16.82
07-Jun-19	36	256	466	10.27	28.3
21-Jun-19	12	118	287	11	11.9
05-Jul-19	28	77	217	10.37	10.44
19-Jul-19	19	59	95	9.51	13.08
07-Aug-19	20	39	62	10.91	12.38
22-Aug-19	17	75	207	11.48	10.24
06-Sep-19	32	114	158	8.92	15.39
23-Sep-19	14	30	47	5.29	11.28
10-Oct-19	20	91	111	7.16	10.74
26-Oct-19	12	190	226	12.97	9.12
08-Nov-19	24	139	217	7.47	10.36
25-Nov-19	18	118	207	5.5	7.93
06-Dec-19	54	137	192	9.29	12.42
20-Dec-19	23	343	439	8.4	23.84
07-Jan-20	22	103	141	16.21	20.62
23-Jan-20	45	161	216	11.45	26.72
07-Feb-20	29	223	312	10.77	23.64
22-Feb-20	36	283	353	7.45	20.95
06-Mar-20	26	133	236	11.24	27.81
23-Mar-20	22	98	135	18.3	33.33
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>84</b>	<b>425</b>	<b>528</b>	<b>18.3</b>	<b>33.33</b>
<b>Minimum</b>	<b>12</b>	<b>30</b>	<b>47</b>	<b>5.29</b>	<b>7.93</b>
<b>Average</b>	<b>30.4</b>	<b>165.3</b>	<b>242.5</b>	<b>10.7</b>	<b>18.6</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:51  
**Area:** Orient  
**Project:** Orient Mine No. 3  
**Monitoring Station:** Orient Mine No. 3

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
08-Apr-19	16	360	414	14.75	15.47
19-Apr-19	55	209	261	11.2	29.48
07-May-19	84	218	288	8.93	19.01
21-May-19	20	222	300	10.44	12.95
06-Jun-19	18	245	357	11.26	16.6
20-Jun-19	20	102	186	11.83	14.81
04-Jul-19	33	68	124	9.1	8.02
18-Jul-19	24	170	212	7.76	12.97
06-Aug-19	59	89	142	9.47	10.14
05-Sep-19	36	70	150	7.37	12.62
20-Sep-19	12	28	34	7.72	8.82
09-Oct-19	30	113	152	12.06	15.21
25-Oct-19	12	272	337	10.13	10.09
09-Nov-19	61	285	349	11.41	14.78
26-Nov-19	34	211	244	9.48	10.15
05-Dec-19	33	110	138	7.8	9.75
19-Dec-19	50	123	156	8.63	19.18
06-Jan-20	20	117	215	9.7	18.85
23-Jan-20	36	86	114	11.66	21.02
06-Feb-20	67	212	281	7.24	12.52
20-Feb-20	89	191	230	11.51	26.55
05-Mar-20	22	94	192	12.83	20.23
21-Mar-20	17	78	104	12.27	29.98
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>77</b>	<b>360</b>	<b>414</b>	<b>16.69</b>	<b>36.65</b>
<b>Minimum</b>	<b>13</b>	<b>34</b>	<b>57</b>	<b>5.57</b>	<b>7.45</b>
<b>Average</b>	<b>29.9</b>	<b>154.6</b>	<b>217.0</b>	<b>10.4</b>	<b>16.5</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:52

**Area:** Orient

**Project:** Orient Mine No. 4

**Monitoring Station:** Orient Mine No. 4

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
08-Apr-19	23	346	399	11.01	12.56
19-Apr-19	27	187	294	10.31	27.72
07-May-19	32	284	394	12.16	22.09
21-May-19	18	114	222	11.52	14.05
06-Jun-19	77	211	331	11.27	14.8
20-Jun-19	49	116	220	11.57	12.91
04-Jul-19	36	166	234	10.94	9.63
18-Jul-19	23	38	57	9.72	15.55
06-Aug-19	17	83	153	5.57	7.81
05-Sep-19	19	34	88	8.78	12.48
20-Sep-19	25	63	86	7.25	7.45
09-Oct-19	21	45	72	9.63	19.14
25-Oct-19	13	197	294	9.64	12.01
09-Nov-19	24	78	91	9.09	16.68
26-Nov-19	19	100	135	7.14	7.85
06-Dec-19	55	215	251	6.61	11.62
19-Dec-19	35	247	304	12.69	17.17
06-Jan-20	29	120	196	10.24	22.56
23-Jan-20	50	206	259	16.69	18.72
06-Feb-20	29	186	246	8.7	20.52
20-Feb-20	22	164	205	12.66	17.99
05-Mar-20	33	80	150	9.31	21.67
21-Mar-20	26	71	113	11.69	36.65
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO2</b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>77</b>	<b>346</b>	<b>399</b>	<b>16.69</b>	<b>36.65</b>
<b>Minimum</b>	<b>13</b>	<b>34</b>	<b>57</b>	<b>5.57</b>	<b>7.45</b>
<b>Average</b>	<b>30.5</b>	<b>145.7</b>	<b>208.4</b>	<b>10.2</b>	<b>16.5</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:53  
**Area: Orient**  
**Project: HBI Mine**  
**Monitoring Station: HBI Mine**

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
10-Apr-19	77	342	426	10.24	18.4
22-Apr-19	42	209	288	11.76	27.08
09-May-19	46	296	493	10.09	25.05
23-May-19	31	122	197	10.54	10.88
10-Jun-19	58	259	354	11.46	15.9
24-Jun-19	20	244	340	10.78	12.43
08-Jul-19	16	87	122	11.85	12.67
22-Jul-19	39	202	294	9.01	11.59
08-Aug-19	52	82	149	11.66	19.2
09-Sep-19	52	231	276	9.17	20.57
25-Sep-19	32	107	129	11.35	12.76
11-Oct-19	35	258	285	12.89	10.53
28-Oct-19	23	136	183	9.36	13.16
09-Nov-19	49	98	148	11.45	18.6
26-Nov-19	13	212	293	6.7	12.4
09-Dec-19	24	251	309	7.85	16.91
23-Dec-19	68	162	208	8.89	14.94
08-Jan-20	27	226	310	18.69	26.56
27-Jan-20	58	150	180	11.27	15.78
08-Feb-20	42	226	306	7.02	18.21
24-Feb-20	33	197	239	9.52	16.46
07-Mar-20	23	155	233	10.08	20.54
24-Mar-20	20	102	154	15.71	37.43
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>
<b>Maximum</b>	<b>77</b>	<b>342</b>	<b>493</b>	<b>18.69</b>	<b>37.43</b>
<b>Minimum</b>	<b>13</b>	<b>82</b>	<b>122</b>	<b>6.7</b>	<b>10.53</b>
<b>Average</b>	<b>38.3</b>	<b>189.3</b>	<b>257.2</b>	<b>10.8</b>	<b>17.7</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:54

**Area:** Orient

**Project:** HBI Mine

**Monitoring Station:** Bundia Colony Pump House

Date of Sampling	PM2.5	PM10	SPM	SO2	NOx
10-Apr-19	28	181	271	12.67	13.16
22-Apr-19	49	139	237	13.87	25.42
09-May-19	76	294	503	11	23
23-May-19	26	133	204	11.32	10.74
10-Jun-19	53	299	398	12.46	17.6
24-Jun-19	36	294	461	10.5	14.38
08-Jul-19	17	51	136	10.71	15.73
22-Jul-19	21	91	163	9.26	12.07
08-Aug-19	73	102	169	8.33	10.74
23-Aug-19	53	186	264	11.58	11.13
09-Sep-19	10	25	62	10.43	12.2
25-Sep-19	28	81	108	11.8	13.48
11-Oct-19	30	137	174	10.82	17.92
28-Oct-19	18	178	239	9.81	19.72
09-Nov-19	16	183	287	9.64	14.74
26-Nov-19	86	224	286	11.99	17.3
09-Dec-19	13	289	352	10.74	9.38
23-Dec-19	54	334	421	11.19	14.66
08-Jan-20	41	242	283	13.48	18.58
27-Jan-20	25	327	375	18.87	20.44
08-Feb-20	21	212	291	12.76	31.26
24-Feb-20	23	166	201	15.28	21.15
07-Mar-20	17	78	116	11.18	32.52
24-Mar-20	15	70	98	10.65	34.79
<b>Brief Statistics</b>	<b>PM2.5</b>	<b>PM10</b>	<b>SPM</b>	<b>SO2</b>	<b>NOx</b>
<b>Maximum</b>	<b>86</b>	<b>334</b>	<b>503</b>	<b>18.87</b>	<b>34.79</b>
<b>Minimum</b>	<b>10</b>	<b>25</b>	<b>62</b>	<b>8</b>	<b>9</b>
<b>Average</b>	<b>34.54</b>	<b>179.83</b>	<b>254.13</b>	<b>11.68</b>	<b>18.00</b>
<b>Standard (24 Hrs)</b>	<b>60</b>	<b>300</b>	<b>600</b>	<b>120</b>	<b>120</b>
<b>Standard (Annual)</b>	<b>40</b>	<b>215</b>	<b>430</b>	<b>80</b>	<b>80</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:55

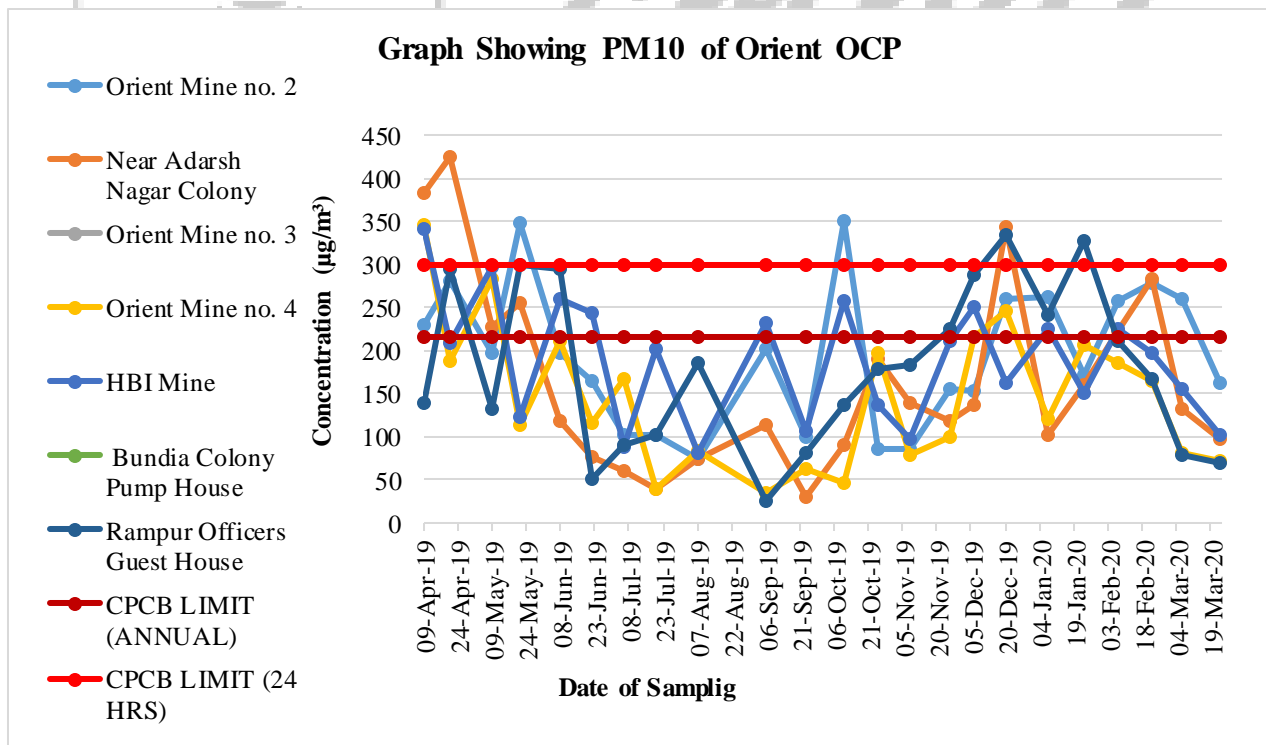
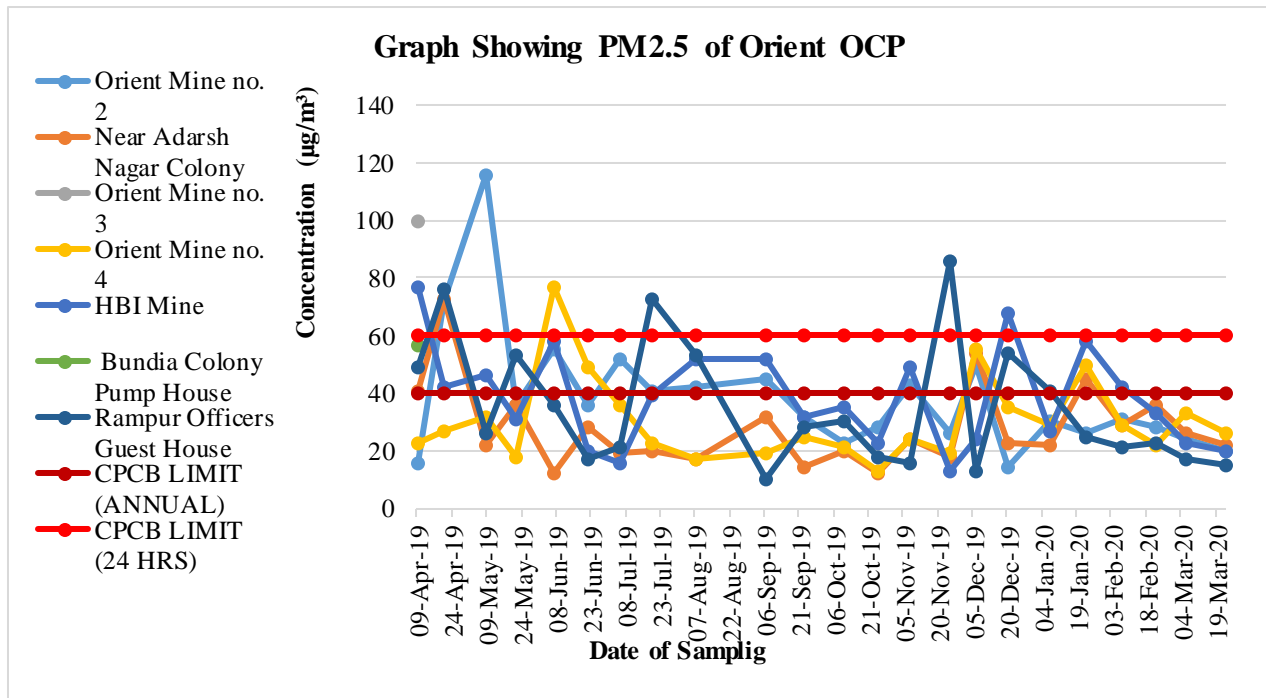
Area: Orient

Project: HBI Mine

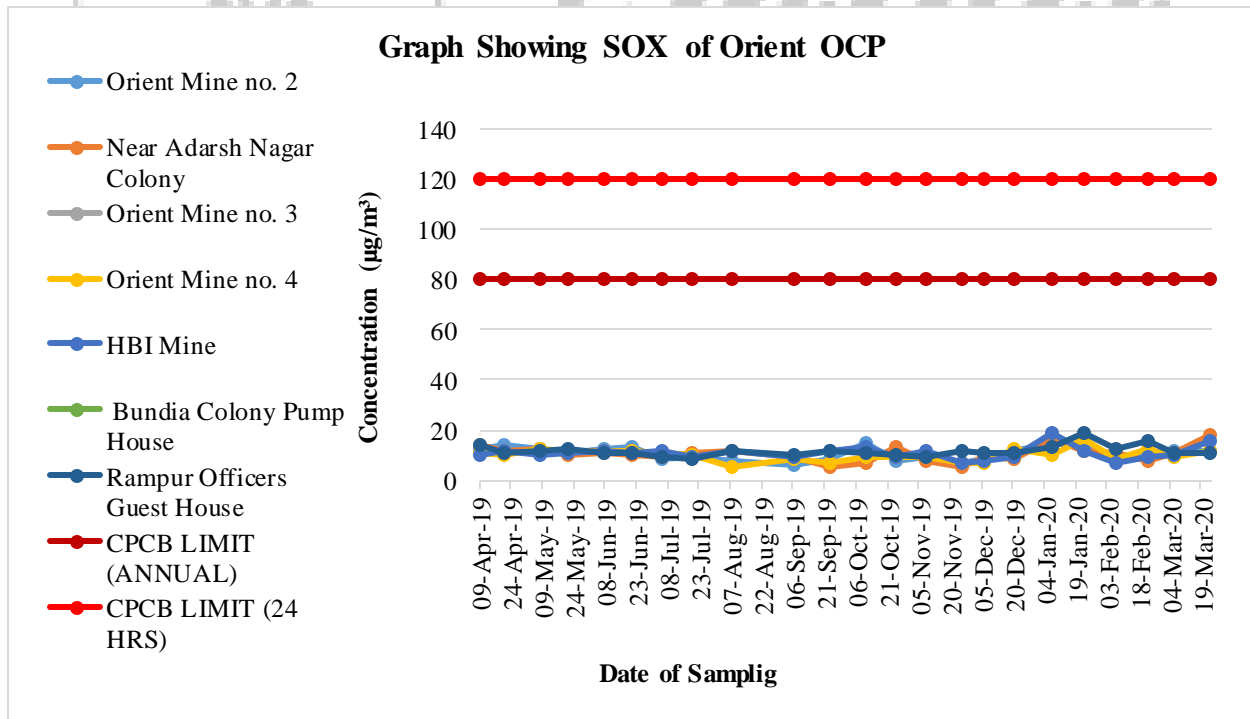
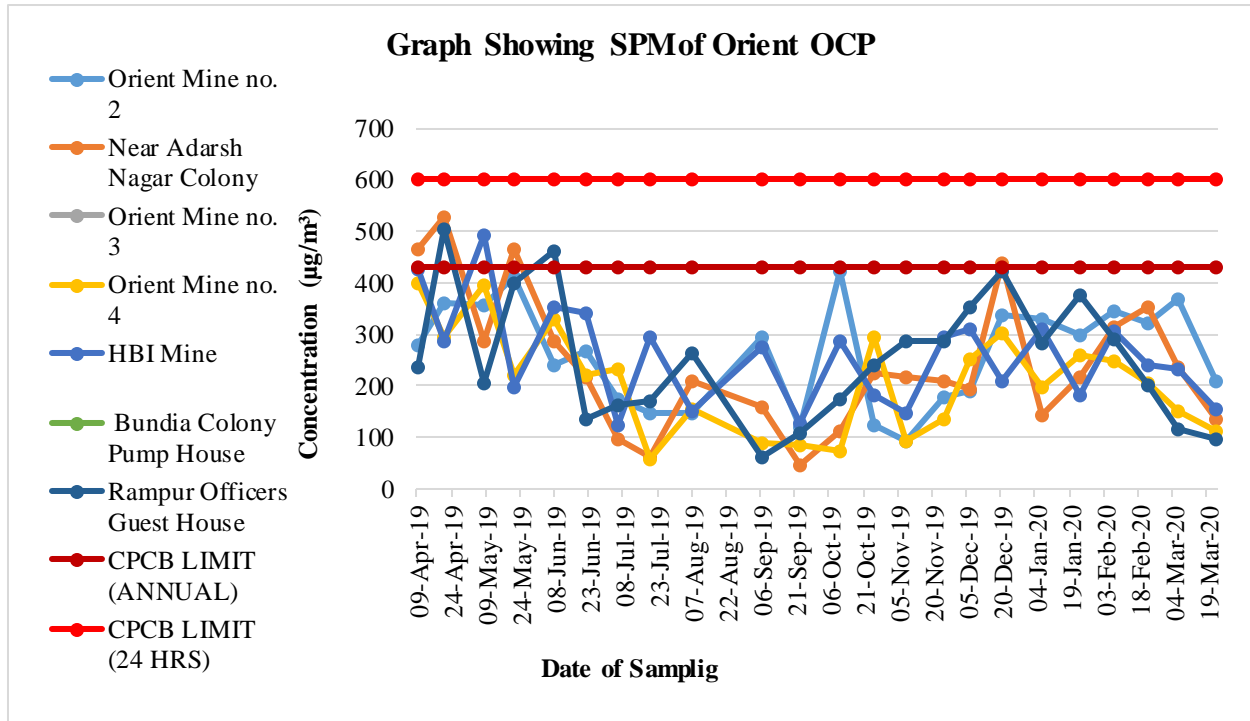
Monitoring Station: Rampur Officers Guest House

Date of Samling	PM 2.5	PM 10	SPM/TPM	SO2	NO2
10-Apr-19	28	409	271	12.67	13.16
22-Apr-19	49	354	237	13.87	25.42
09-May-19	76	294	503	11	23
23-May-19	26	133	204	11.32	10.74
10-Jun-19	53	299	398	12.46	17.6
24-Jun-19	36	294	461	10.5	14.38
08-Jul-19	17	51	136	10.71	15.73
22-Jul-19	21	91	163	9.26	12.07
08-Aug-19	73	102	169	8.33	10.74
23-Aug-19	53	186	264	11.58	11.13
09-Sep-19	10	25	62	10.43	12.2
25-Sep-19	28	81	108	11.8	13.48
11-Oct-19	30	137	174	10.82	17.92
28-Oct-19	18	178	239	9.81	19.72
09-Nov-19	16	183	287	9.64	14.74
26-Nov-19	86	224	286	11.99	17.3
09-Dec-19	13	289	352	10.74	9.38
23-Dec-19	54	334	421	11.19	14.66
08-Jan-20	41	242	283	13.48	18.58
27-Jan-20	25	327	375	18.87	20.44
08-Feb-20	21	212	291	12.76	31.26
24-Feb-20	23	166	201	15.28	21.15
07-Mar-20	17	78	116	11.18	32.52
24-Mar-20	15	70	98	10.65	34.79
<b>Brief Statistics</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>SPM</b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>
Maximum	86	334	503	18.87	34.79
Minimum	10	25	62	8.33	9.38
Average	34.5	179.8	254.1	11.7	18.0
Standard (24 Hrs)	60	300	600	120	120
Standard (Annual)	40	215	430	80	80

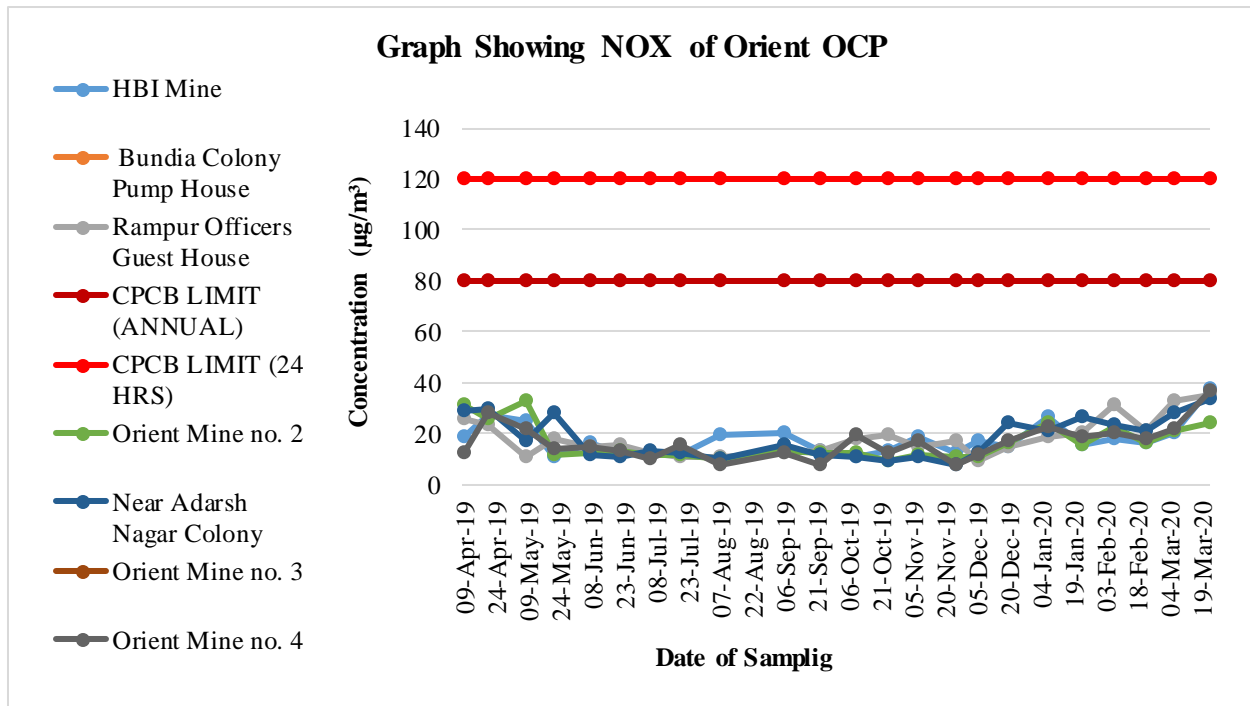
ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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# NOISE LEVEL MONITORING





## 5. NOISE QUALITY DATA

Table:56

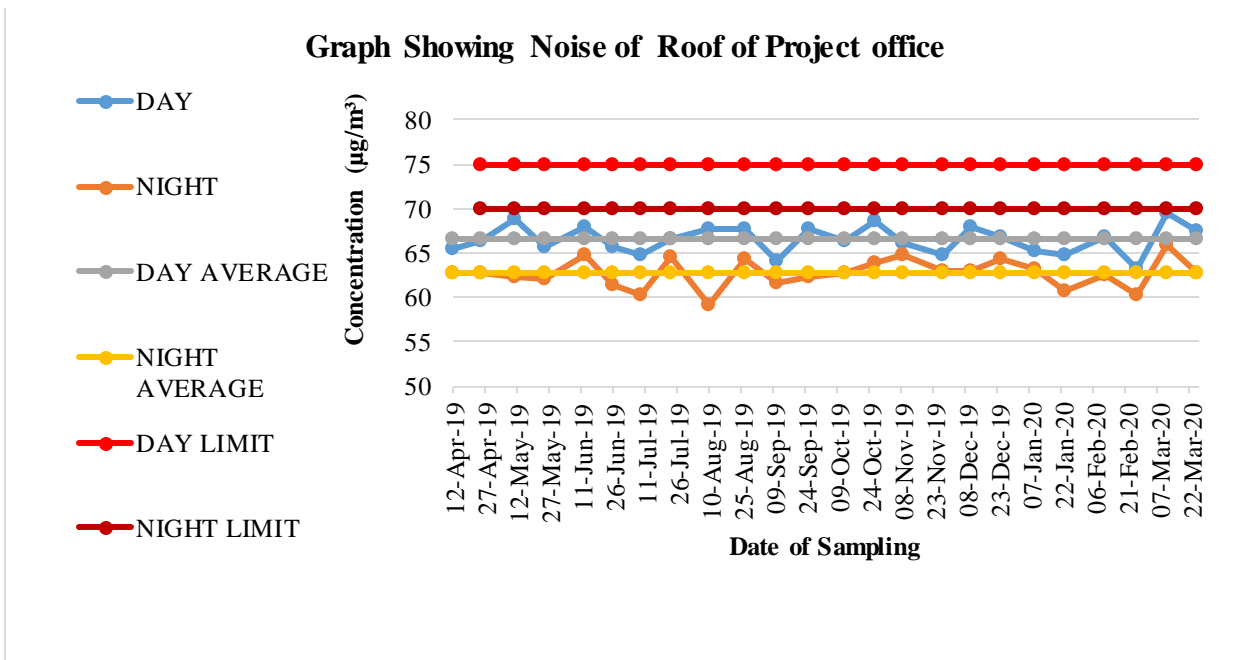
Area: Ib Valley Area

Project: Samaleswari OCP

Monitoring Station: Roof of Project Office, SOCP

DATE OF SAMPLING	DAY	NIGHT
12-Apr-19	65.5	62.8
25-Apr-19	66.4	62.7
11-May-19	68.8	62.3
25-May-19	65.6	62.1
12-Jun-19	67.9	64.8
25-Jun-19	65.7	61.4
09-Jul-19	64.7	60.2
23-Jul-19	66.5	64.6
09-Aug-19	67.7	59.2
26-Aug-19	67.8	64.3
10-Sep-19	64.2	61.7
25-Sep-19	67.6	62.4
12-Oct-19	66.3	62.7
26-Oct-19	68.7	63.9
08-Nov-19	66.2	64.8
27-Nov-19	64.7	62.9
10-Dec-19	67.9	62.9
24-Dec-19	66.9	64.3
09-Jan-20	65.2	63.3
23-Jan-20	64.7	60.8
11-Feb-20	66.7	62.5
26-Feb-20	63.2	60.3
11-Mar-20	69.4	65.9
25-Mar-20	67.4	62.8
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>63.2</b>	<b>59.2</b>
<b>Maximum</b>	<b>69.4</b>	<b>65.9</b>
<b>Mean</b>	<b>66.49</b>	<b>62.73</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

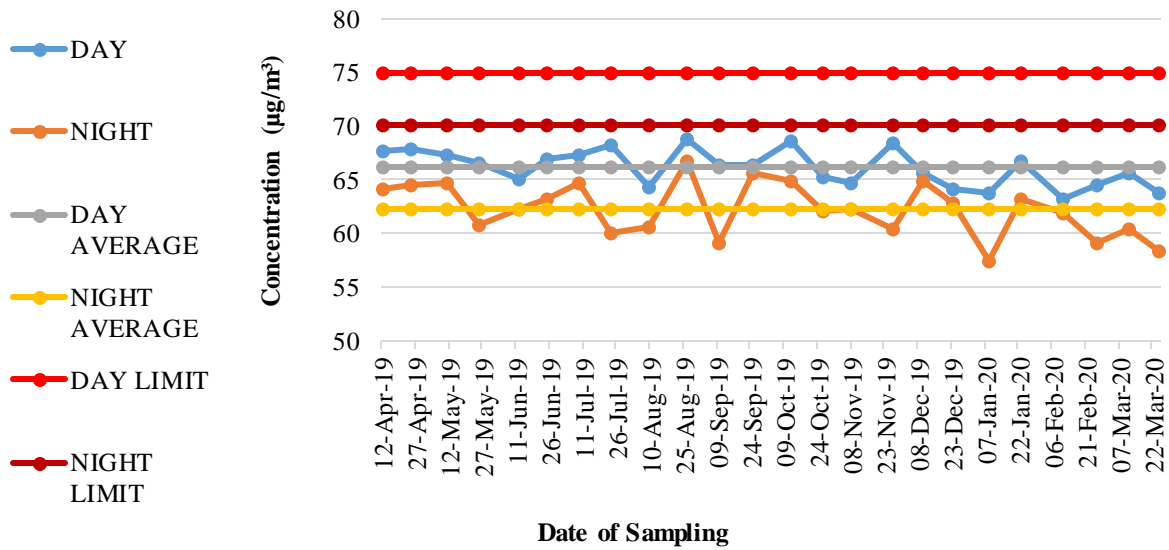


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Table:57  
**Area:** Ib Valley Area  
**Project:** Samaleswari OCP  
**Monitoring Station:** Near Rejoice Club in Hill Top Colony

DATE OF SAMPLING	DAY	NIGHT
12-Apr-19	67.6	64.2
25-Apr-19	67.9	64.5
11-May-19	67.3	64.6
25-May-19	66.5	60.8
12-Jun-19	65.1	62.3
25-Jun-19	66.9	63.2
09-Jul-19	67.2	64.7
23-Jul-19	68.2	60
09-Aug-19	64.3	60.6
26-Aug-19	68.8	66.7
10-Sep-19	66.4	59.1
25-Sep-19	66.4	65.7
12-Oct-19	68.6	64.9
26-Oct-19	65.3	62.1
08-Nov-19	64.7	62.3
27-Nov-19	68.4	60.4
10-Dec-19	65.7	64.8
24-Dec-19	64.2	62.9
09-Jan-20	63.7	57.5
23-Jan-20	66.8	63.2
11-Feb-20	63.2	61.9
26-Feb-20	64.5	59.1
11-Mar-20	65.7	60.4
25-Mar-20	63.7	58.4
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>63.2</b>	<b>57.5</b>
<b>Maximum</b>	<b>68.8</b>	<b>66.7</b>
<b>Mean</b>	<b>66.13</b>	<b>62.26</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

**Graph Showing Noise of Near Re-Joice Club in Hiltop Colony**



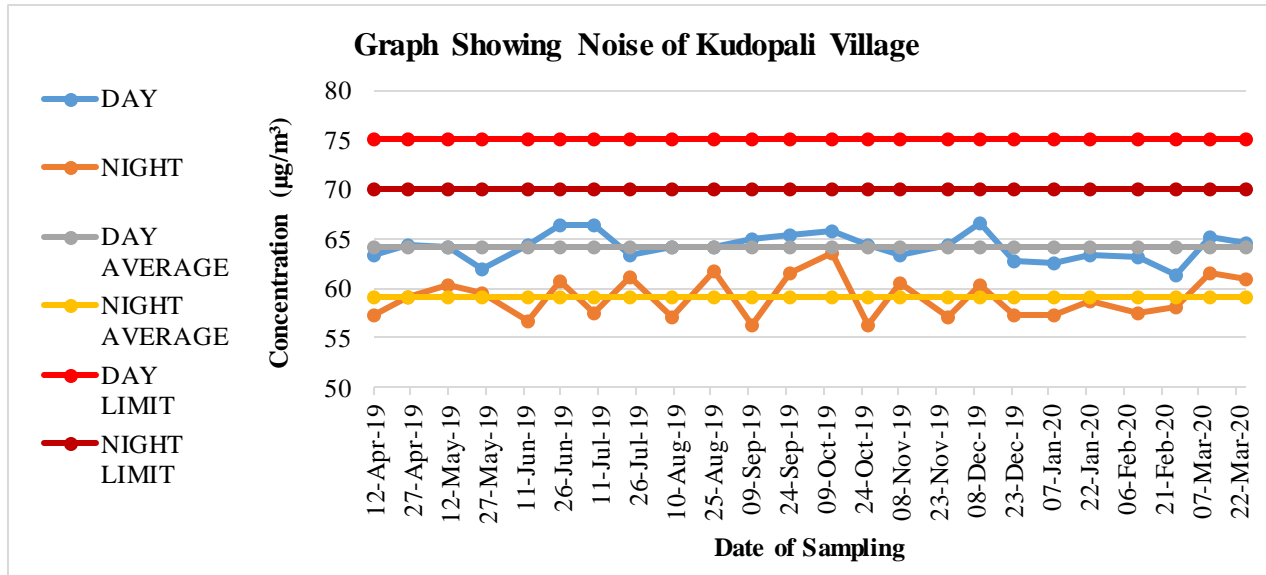
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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:58  
**Area:** Ib Valley Area  
**Project:** Samaleswari OCP  
**Monitoring Station:** Near Kudopali

DATE OF SAMPLING	DAY	NIGHT
12-Apr-19	63.3	57.4
25-Apr-19	64.3	59.2
11-May-19	64.2	60.4
25-May-19	62	59.6
12-Jun-19	64.3	56.7
25-Jun-19	66.3	60.8
09-Jul-19	66.3	57.6
23-Jul-19	63.3	61.2
09-Aug-19	64.2	57.2
26-Aug-19	64.2	61.8
10-Sep-19	64.9	56.4
25-Sep-19	65.3	61.5
12-Oct-19	65.8	63.5
26-Oct-19	64.3	56.3
08-Nov-19	63.4	60.6
27-Nov-19	64.3	57.2
10-Dec-19	66.5	60.4
24-Dec-19	62.7	57.4
09-Jan-20	62.5	57.4
23-Jan-20	63.4	58.7
11-Feb-20	63.2	57.6
26-Feb-20	61.4	58.2
11-Mar-20	65.2	61.5
25-Mar-20	64.5	60.9
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>61.4</b>	<b>56.3</b>
<b>Maximum</b>	<b>66.5</b>	<b>63.5</b>
<b>Mean</b>	<b>64.16</b>	<b>59.15</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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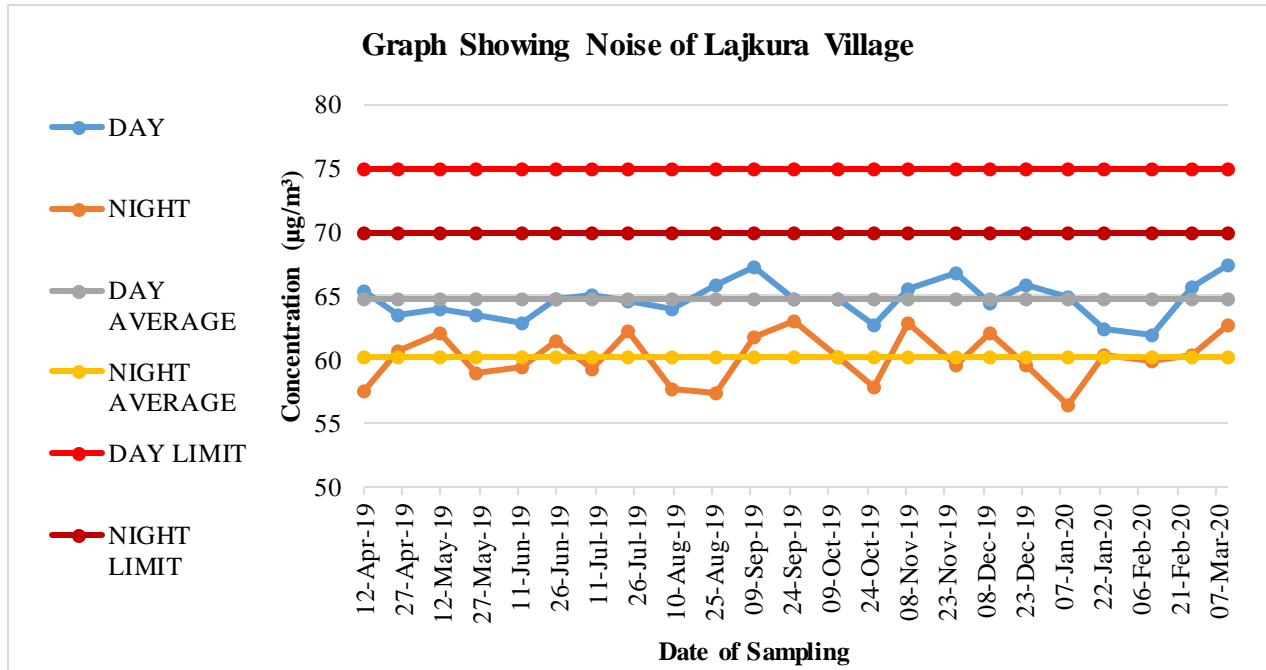
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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:59  
**Area:** Ib Valley Area  
**Project:** Samaleswari OCP  
**Monitoring Station:** Lajkura Village

DATE OF SAMPLING	DAY	NIGHT
12-Apr-19	65.4	57.5
25-Apr-19	63.5	60.7
11-May-19	63.9	62.1
25-May-19	63.5	58.9
12-Jun-19	62.9	59.4
25-Jun-19	64.8	61.4
09-Jul-19	65.1	59.3
23-Jul-19	64.6	62.3
09-Aug-19	63.9	57.7
26-Aug-19	65.9	57.4
10-Sep-19	67.3	61.7
25-Sep-19	64.8	63.1
12-Oct-19	64.7	60.2
26-Oct-19	62.7	57.9
08-Nov-19	65.6	62.9
27-Nov-19	66.8	59.5
10-Dec-19	64.4	62.1
24-Dec-19	65.9	59.6
09-Jan-20	64.9	56.4
23-Jan-20	62.4	60.3
11-Feb-20	61.9	59.9
26-Feb-20	65.7	60.4
11-Mar-20	67.4	62.7
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>61.9</b>	<b>56.4</b>
<b>Maximum</b>	<b>67.4</b>	<b>63.1</b>
<b>Mean</b>	<b>64.70</b>	<b>60.15</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



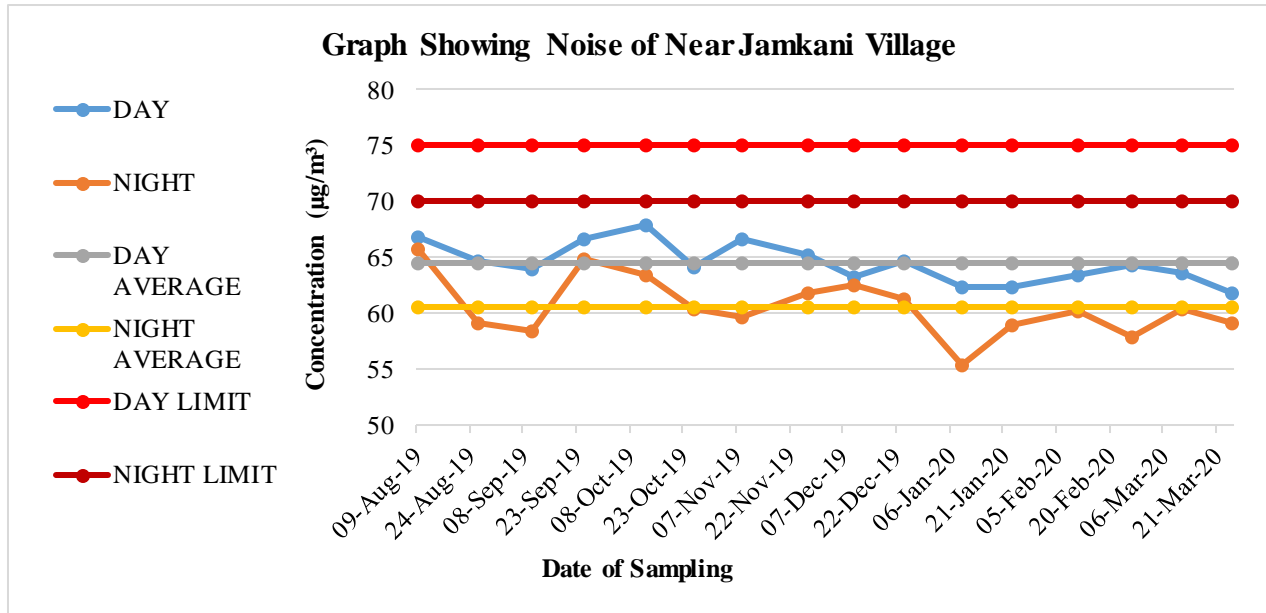


ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:60  
**Area:** Ib Valley Area  
**Project:** Samaleswari OCP  
**Monitoring Station:** Jamkani Village

<b>DATE OF SAMPLING</b>	<b>DAY</b>	<b>NIGHT</b>
12-Apr-19	62.6	56.4
25-Apr-19	66.8	64.3
11-May-19	65.7	63.9
25-May-19	64.9	60.4
12-Jun-19	63.7	57.3
25-Jun-19	63.5	60.3
09-Jul-19	64.9	62.4
23-Jul-19	62.2	57.6
09-Aug-19	66.9	65.8
26-Aug-19	64.7	59.2
10-Sep-19	63.9	58.4
25-Sep-19	66.7	64.8
12-Oct-19	67.9	63.5
26-Oct-19	64.2	60.3
08-Nov-19	66.7	59.7
27-Nov-19	65.2	61.8
10-Dec-19	63.3	62.6
24-Dec-19	64.6	61.3
09-Jan-20	62.4	55.4
23-Jan-20	62.3	58.9
11-Feb-20	63.4	60.2
26-Feb-20	64.3	57.8
11-Mar-20	63.6	60.4
25-Mar-20	61.8	59.1
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>61.8</b>	<b>55.4</b>
<b>Maximum</b>	<b>67.9</b>	<b>65.8</b>
<b>Mean</b>	<b>64.43</b>	<b>60.49</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



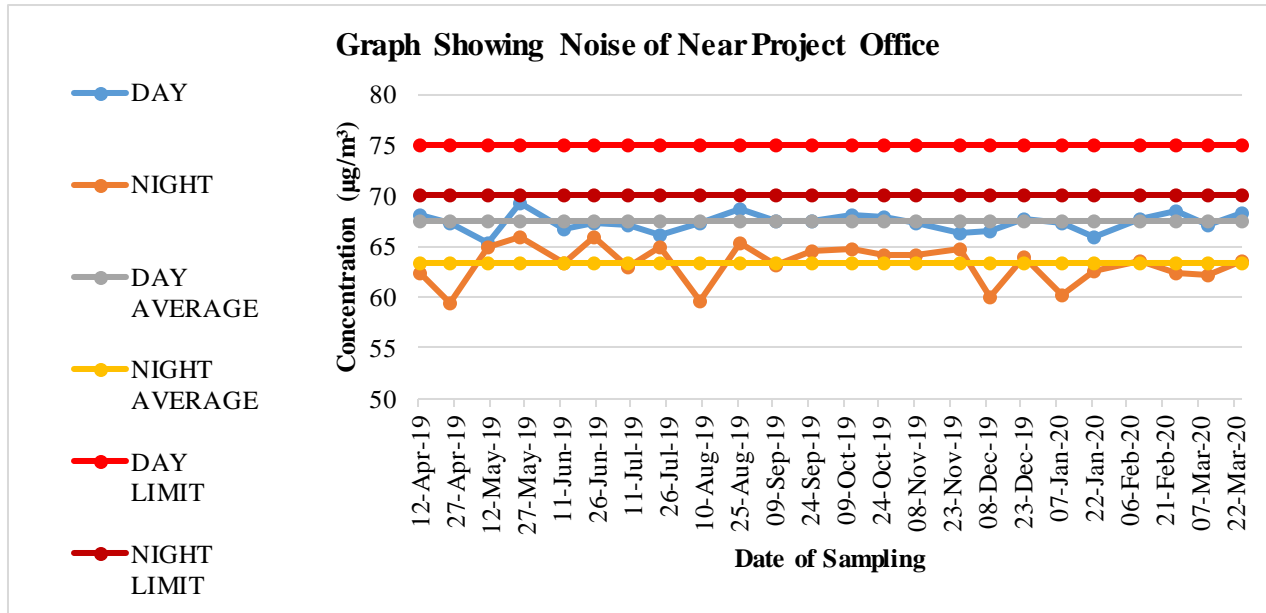
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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:61  
**Area:** Ib Valley Area  
**Project:** Lajkura OCP  
**Monitoring Station:** Near Project Office

DATE OF SAMPLING	DAY	NIGHT
12-Apr-19	68.2	62.3
25-Apr-19	67.4	59.4
11-May-19	65.4	64.9
25-May-19	69.3	65.9
12-Jun-19	66.8	63.4
25-Jun-19	67.3	65.9
09-Jul-19	67.1	62.9
23-Jul-19	66.2	64.9
09-Aug-19	67.4	59.7
26-Aug-19	68.7	65.4
10-Sep-19	67.6	63.2
25-Sep-19	67.6	64.6
12-Oct-19	68.2	64.7
26-Oct-19	67.9	64.2
08-Nov-19	67.4	64.2
27-Nov-19	66.3	64.7
10-Dec-19	66.6	60.1
24-Dec-19	67.8	63.9
09-Jan-20	67.3	60.2
23-Jan-20	65.9	62.5
11-Feb-20	67.7	63.5
26-Feb-20	68.6	62.4
11-Mar-20	67.1	62.2
25-Mar-20	68.4	63.6
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>65.4</b>	<b>59.4</b>
<b>Maximum</b>	<b>69.3</b>	<b>65.9</b>
<b>Mean</b>	<b>67.43</b>	<b>63.28</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:62

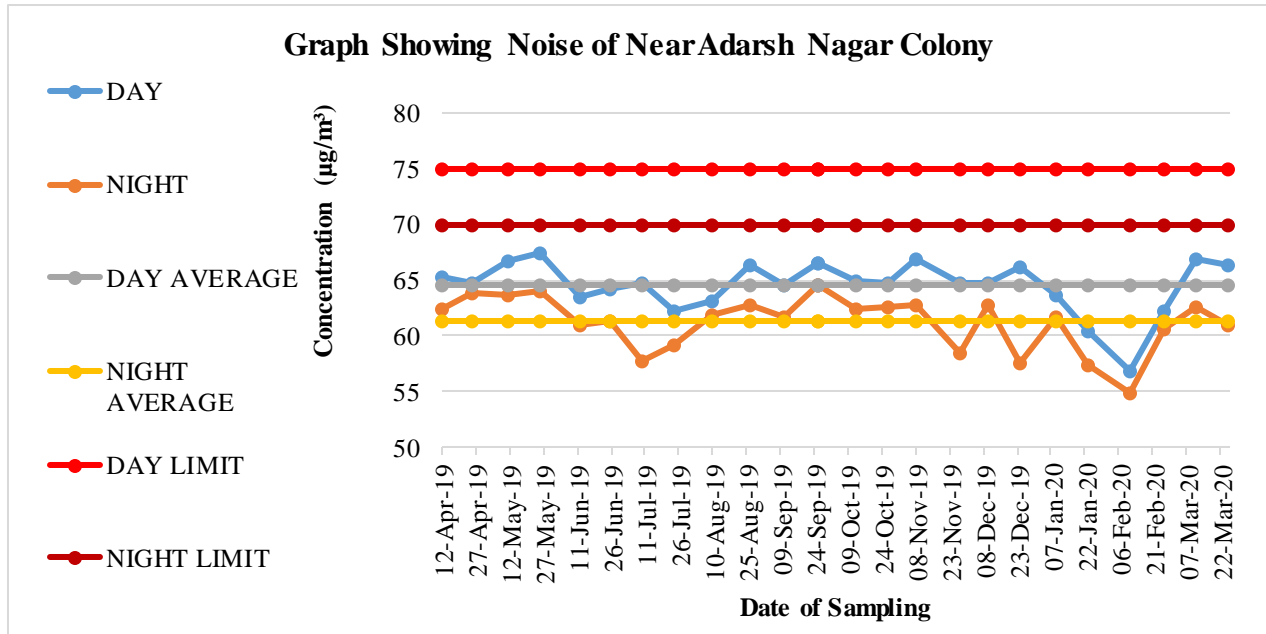
Area: Ib Valley Area

Project: Lajkura OCP

Monitoring Station: Near Adarsh Nagar Colony

\	DAY	NIGHT
12-Apr-19	65.2	62.5
25-Apr-19	64.7	63.9
11-May-19	66.7	63.7
25-May-19	67.4	64
12-Jun-19	63.5	60.9
25-Jun-19	64.2	61.3
09-Jul-19	64.7	57.7
23-Jul-19	62.3	59.2
09-Aug-19	63.2	61.9
26-Aug-19	66.3	62.7
10-Sep-19	64.5	61.7
25-Sep-19	66.6	64.5
12-Oct-19	64.9	62.4
26-Oct-19	64.7	62.6
08-Nov-19	66.9	62.8
27-Nov-19	64.8	58.4
10-Dec-19	64.8	62.7
24-Dec-19	66.2	57.6
09-Jan-20	63.7	61.7
23-Jan-20	60.4	57.4
11-Feb-20	56.9	54.8
26-Feb-20	62.3	60.7
11-Mar-20	66.9	62.6
25-Mar-20	66.3	60.9
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>62.3</b>	<b>57.7</b>
<b>Maximum</b>	<b>67.4</b>	<b>64.5</b>
<b>Mean</b>	<b>64.93</b>	<b>61.98</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



cmpdi

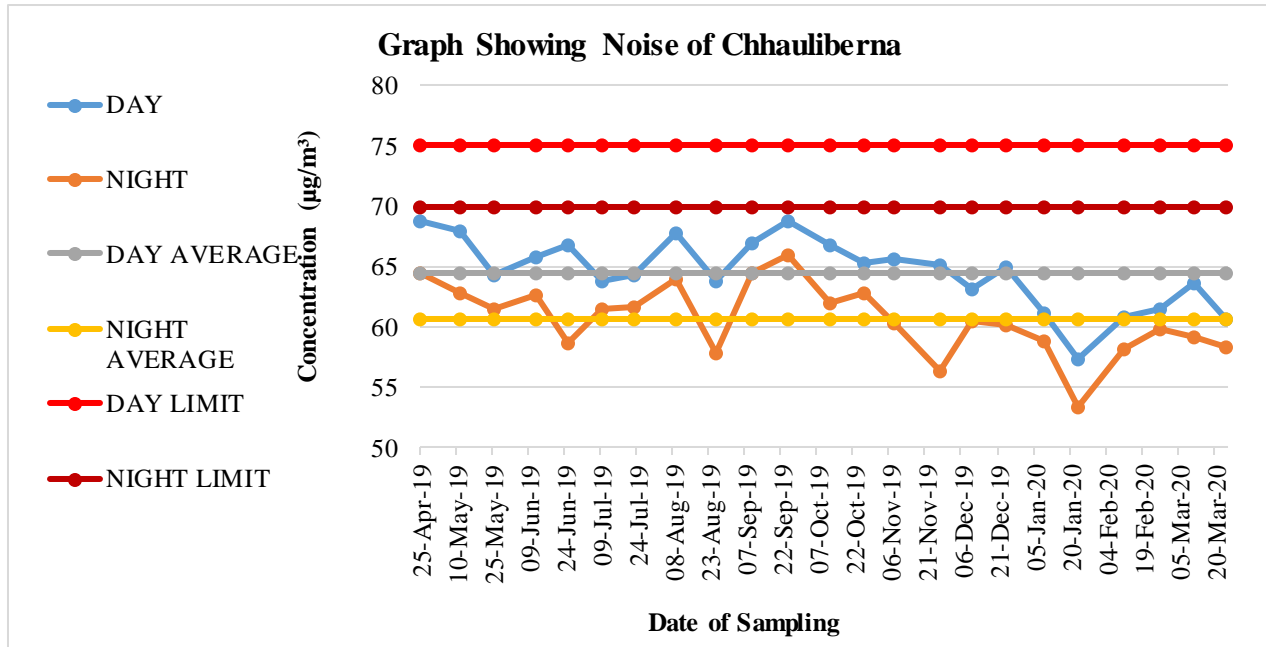
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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:63  
**Area:** Ib Valley Area  
**Project:** Lajkura OCP  
**Monitoring Station:** Chhaulibera

DATE OF SAMPLING	DAY	NIGHT
12-Apr-19	63.3	61.4
25-Apr-19	68.7	64.5
11-May-19	67.9	62.8
25-May-19	64.3	61.4
12-Jun-19	65.8	62.6
25-Jun-19	66.7	58.7
09-Jul-19	63.8	61.4
23-Jul-19	64.3	61.7
09-Aug-19	67.7	63.9
26-Aug-19	63.8	57.9
10-Sep-19	66.9	64.5
25-Sep-19	68.7	65.9
12-Oct-19	66.8	61.9
26-Oct-19	65.3	62.8
08-Nov-19	65.7	60.3
27-Nov-19	65.2	56.3
10-Dec-19	63.2	60.4
24-Dec-19	64.9	60.2
09-Jan-20	61.2	58.9
23-Jan-20	57.4	53.4
11-Feb-20	60.8	58.2
26-Feb-20	61.4	59.9
11-Mar-20	63.7	59.1
25-Mar-20	60.7	58.3
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>57.4</b>	<b>53.4</b>
<b>Maximum</b>	<b>68.7</b>	<b>65.9</b>
<b>Mean</b>	<b>64.51</b>	<b>60.68</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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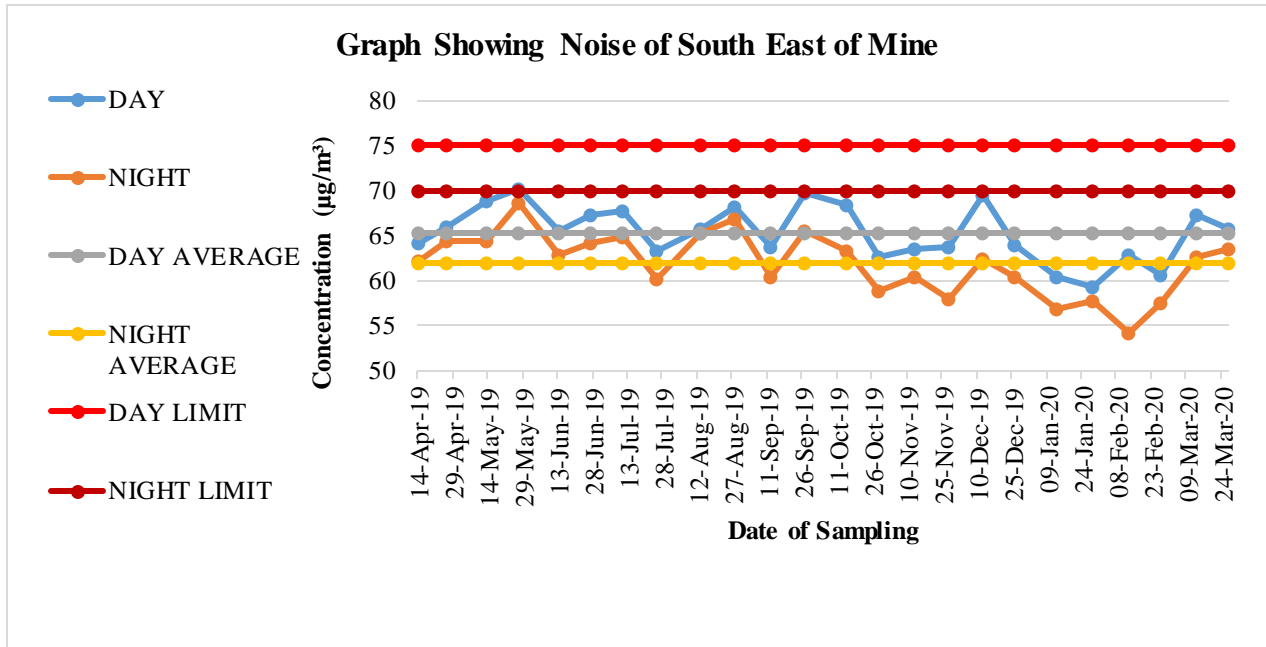


ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:64  
**Area:** Lakhanpur Area  
**Project:** Lilari OCP  
**Monitoring Station:** South East of Mine

DATE OF SAMPLING	DAY	NIGHT
14-Apr-19	64.2	62.1
26-Apr-19	65.9	64.4
13-May-19	68.7	64.4
27-May-19	70.1	68.6
13-Jun-19	65.4	62.8
27-Jun-19	67.3	64.2
11-Jul-19	67.8	64.9
13-Aug-19	65.7	65.3
28-Aug-19	68.2	66.7
12-Sep-19	63.7	60.4
27-Sep-19	69.6	65.5
15-Oct-19	68.4	63.3
29-Oct-19	62.6	58.7
13-Nov-19	63.4	60.4
28-Nov-19	63.6	57.8
12-Dec-19	69.4	62.4
26-Dec-19	63.9	60.4
13-Jan-20	60.4	56.7
29-Jan-20	59.2	57.6
13-Feb-20	62.8	54.2
27-Feb-20	60.6	57.5
13-Mar-20	67.3	62.6
27-Mar-20	65.6	63.4
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>59.2</b>	<b>54.2</b>
<b>Maximum</b>	<b>70.1</b>	<b>68.6</b>
<b>Mean</b>	<b>65.29</b>	<b>61.85</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:65

Area: Lakhanpur Area

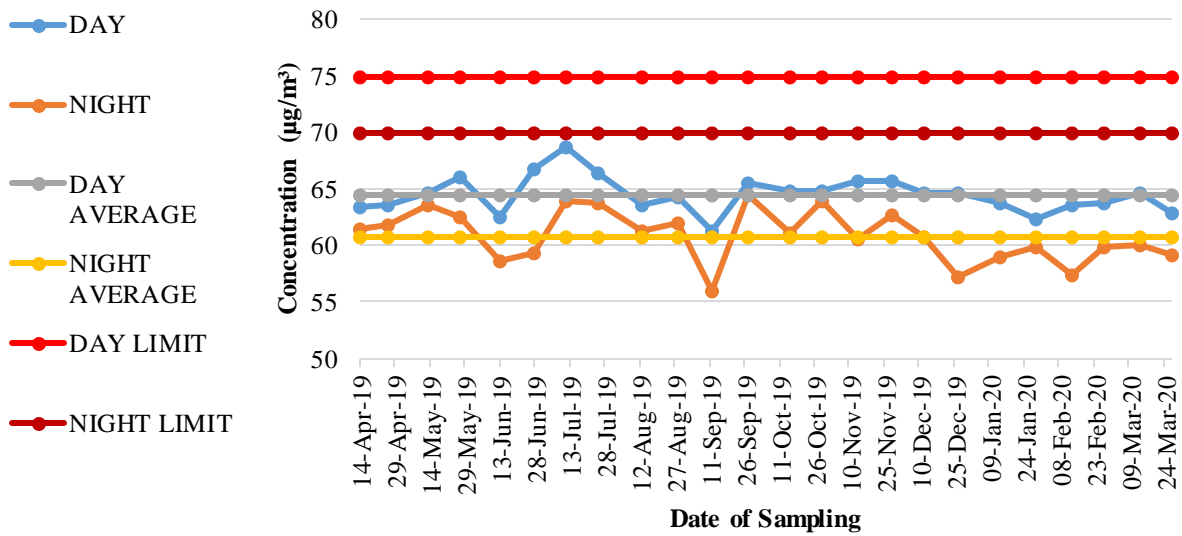
Project: Lakhanpur OCP

Monitoring Station: South of Quarry 5

DATE OF SAMPLING	DAY	NIGHT
26-Apr-19	63.6	61.8
13-May-19	64.6	63.6
27-May-19	66	62.5
13-Jun-19	62.6	58.6
27-Jun-19	66.8	59.4
11-Jul-19	68.7	63.9
25-Jul-19	66.4	63.7
13-Aug-19	63.6	61.3
28-Aug-19	64.3	61.9
12-Sep-19	61.3	55.9
27-Sep-19	65.6	64.5
15-Oct-19	64.8	61.1
29-Oct-19	64.9	63.9
13-Nov-19	65.7	60.5
28-Nov-19	65.7	62.7
12-Dec-19	64.6	60.7
26-Dec-19	64.7	57.2
13-Jan-20	63.7	58.9
29-Jan-20	62.4	59.9
13-Feb-20	63.6	57.4
27-Feb-20	63.7	59.9
13-Mar-20	64.6	60.1
27-Mar-20	62.9	59.2
14-Apr-19	63.4	61.4
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>61.3</b>	<b>55.9</b>
<b>Maximum</b>	<b>68.7</b>	<b>64.5</b>
<b>Mean</b>	<b>64.51</b>	<b>60.83</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph Showing Noise of South of Quarry 5

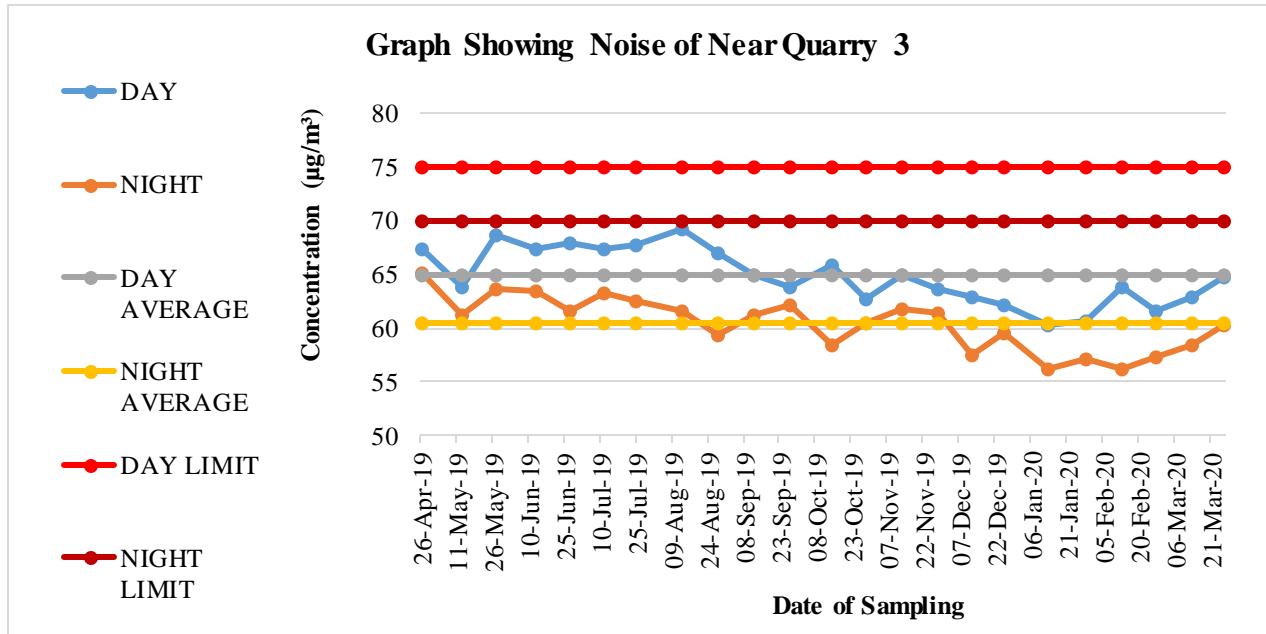


ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:66  
**Area:** Lakhanpur Area  
**Project:** Lakhanpur OCP  
**Monitoring Station:** Near Quarry 3

DATE OF SAMPLING	DAY	NIGHT
14-Apr-19	68.8	63.4
26-Apr-19	67.4	65.2
13-May-19	63.8	61.2
27-May-19	68.7	63.6
13-Jun-19	67.3	63.4
27-Jun-19	67.9	61.5
11-Jul-19	67.4	63.2
25-Jul-19	67.8	62.6
13-Aug-19	69.2	61.5
28-Aug-19	66.9	59.3
12-Sep-19	64.9	61.3
27-Sep-19	63.9	62.2
15-Oct-19	65.9	58.4
29-Oct-19	62.7	60.4
13-Nov-19	64.9	61.8
28-Nov-19	63.7	61.4
12-Dec-19	62.8	57.4
26-Dec-19	62.1	59.6
13-Jan-20	60.3	56.2
29-Jan-20	60.7	57.2
13-Feb-20	63.8	56.2
27-Feb-20	61.6	57.3
13-Mar-20	62.8	58.4
27-Mar-20	64.8	60.3
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>60.3</b>	<b>56.2</b>
<b>Maximum</b>	<b>69.2</b>	<b>65.2</b>
<b>Mean</b>	<b>65.00</b>	<b>60.54</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:67

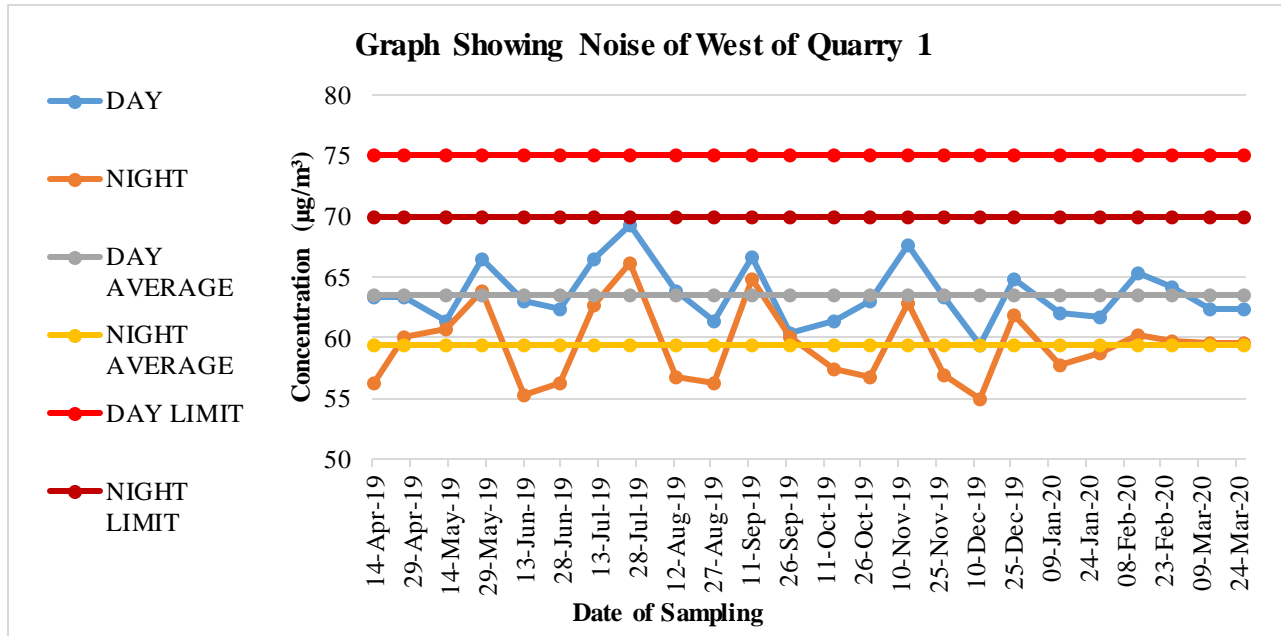
**Area:** Lakhanpur Area

**Project:** Lakhanpur OCP

**Monitoring Station:** West of Quarry 1

DATE OF SAMPLING	DAY	NIGHT
14-Apr-19	63.4	56.3
26-Apr-19	63.4	60.1
13-May-19	61.4	60.7
27-May-19	66.4	63.8
13-Jun-19	63.1	55.2
27-Jun-19	62.4	56.2
11-Jul-19	66.4	62.7
25-Jul-19	69.2	66.1
13-Aug-19	63.8	56.7
28-Aug-19	61.4	56.2
12-Sep-19	66.7	64.9
27-Sep-19	60.4	60.1
15-Oct-19	61.3	57.5
29-Oct-19	63.1	56.7
13-Nov-19	67.7	62.8
28-Nov-19	63.4	56.9
12-Dec-19	59.4	54.9
26-Dec-19	64.9	61.9
13-Jan-20	62.1	57.7
29-Jan-20	61.7	58.7
13-Feb-20	65.3	60.3
27-Feb-20	64.1	59.7
13-Mar-20	62.4	59.5
27-Mar-20	62.4	59.6
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>59.4</b>	<b>54.9</b>
<b>Maximum</b>	<b>69.2</b>	<b>66.1</b>
<b>Mean</b>	<b>63.58</b>	<b>59.38</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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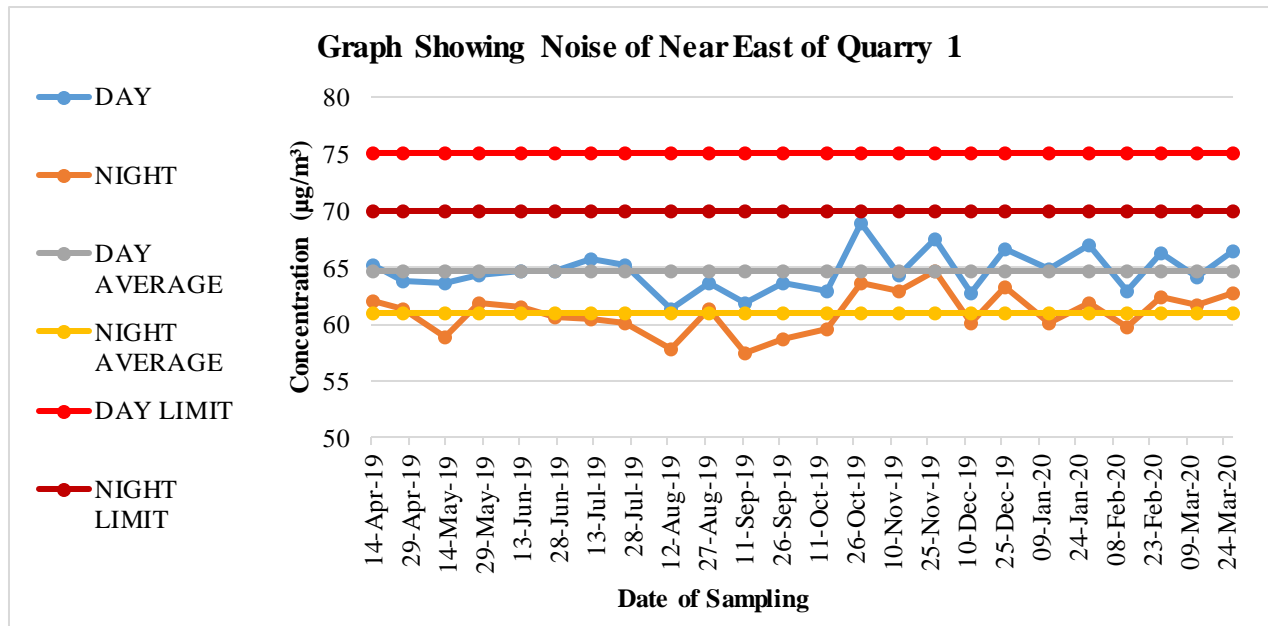


Table:68

Area: **Lakhanpur Area**Project: **Lakhanpur OCP**Monitoring Station: **Near East of Quarry 1**

<b>DATE OF SAMPLING</b>	<b>DAY</b>	<b>NIGHT</b>
14-Apr-19	65.3	62.1
26-Apr-19	63.9	61.4
13-May-19	63.7	58.8
27-May-19	64.3	61.8
13-Jun-19	64.7	61.6
27-Jun-19	64.7	60.7
11-Jul-19	65.7	60.4
25-Jul-19	65.2	60.2
13-Aug-19	61.3	57.9
28-Aug-19	63.7	61.4
12-Sep-19	61.9	57.4
27-Sep-19	63.7	58.7
15-Oct-19	62.9	59.6
29-Oct-19	68.9	63.6
13-Nov-19	64.3	62.9
28-Nov-19	67.5	64.7
12-Dec-19	62.7	60.2
26-Dec-19	66.7	63.2
13-Jan-20	64.9	60.2
29-Jan-20	66.9	61.8
13-Feb-20	62.9	59.7
27-Feb-20	66.2	62.4
13-Mar-20	64.2	61.7
27-Mar-20	66.5	62.7
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>61.3</b>	<b>57.4</b>
<b>Maximum</b>	<b>68.9</b>	<b>64.7</b>
<b>Mean</b>	<b>64.70</b>	<b>61.05</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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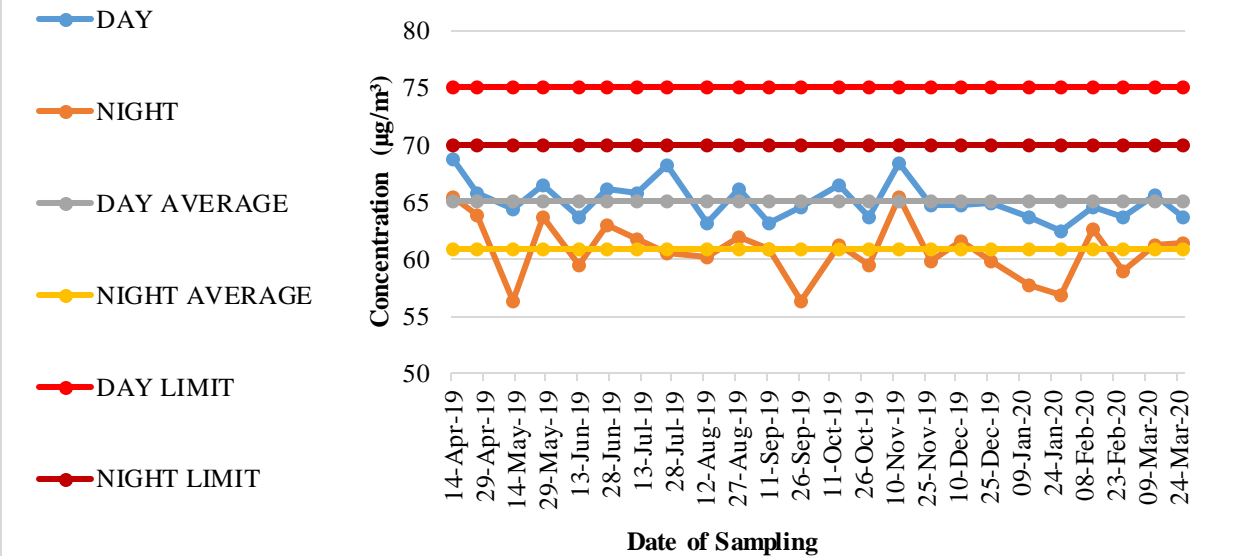
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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table69  
**Area:** Lakhanpur Area  
**Project:** Belpahar OCP  
**Monitoring Station:** South West of Mine

DATE OF SAMPLING	DAY	NIGHT
14-Apr-19	68.7	65.4
26-Apr-19	65.7	63.9
13-May-19	64.4	56.3
27-May-19	66.4	63.7
13-Jun-19	63.6	59.4
27-Jun-19	66.2	62.9
11-Jul-19	65.7	61.8
25-Jul-19	68.2	60.6
13-Aug-19	63.1	60.2
28-Aug-19	66.2	61.9
12-Sep-19	63.2	60.8
27-Sep-19	64.5	56.4
15-Oct-19	66.4	61.2
29-Oct-19	63.6	59.4
13-Nov-19	68.4	65.5
28-Nov-19	64.7	59.8
12-Dec-19	64.8	61.5
26-Dec-19	64.9	59.9
13-Jan-20	63.7	57.7
29-Jan-20	62.4	56.9
13-Feb-20	64.6	62.7
27-Feb-20	63.7	58.9
13-Mar-20	65.6	61.3
27-Mar-20	63.6	61.4
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>62.4</b>	<b>56.3</b>
<b>Maximum</b>	<b>68.7</b>	<b>65.5</b>
<b>Mean</b>	<b>65.10</b>	<b>60.81</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

Graph Showing Noise of South West of Mine



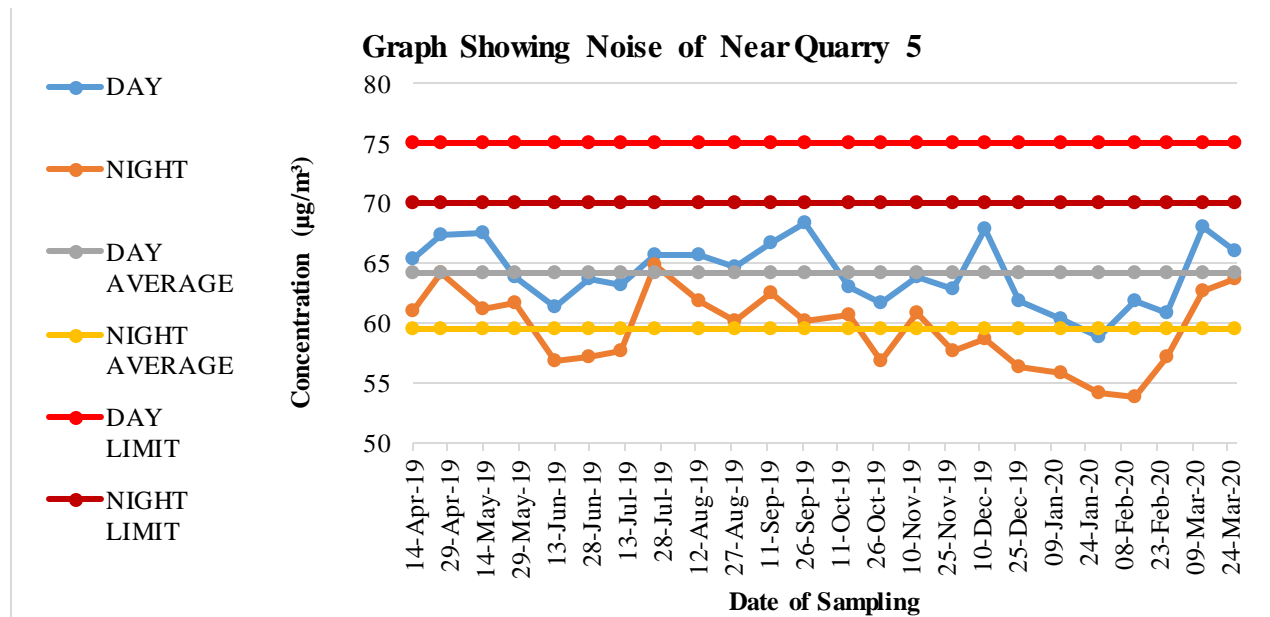
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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:70  
**Area:** Lakhanpur Area  
**Project:** Belpahar OCP  
**Monitoring Station:** Near Quarry 5

DATE OF SAMPLING	DAY	NIGHT
26-Apr-19	67.4	64.2
13-May-19	67.6	61.2
27-May-19	63.9	61.6
13-Jun-19	61.3	56.8
27-Jun-19	63.7	57.2
11-Jul-19	63.2	57.6
25-Jul-19	65.7	64.8
13-Aug-19	65.7	61.9
28-Aug-19	64.7	60.2
12-Sep-19	66.7	62.5
27-Sep-19	68.4	60.2
15-Oct-19	63.1	60.6
29-Oct-19	61.7	56.9
13-Nov-19	63.8	60.9
28-Nov-19	62.8	57.7
12-Dec-19	67.9	58.6
26-Dec-19	61.8	56.4
13-Jan-20	60.4	55.9
29-Jan-20	58.9	54.2
13-Feb-20	61.9	53.9
27-Feb-20	60.8	57.1
13-Mar-20	68.1	62.6
27-Mar-20	66.1	63.7
14-Apr-19	65.3	61
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>58.9</b>	<b>53.9</b>
<b>Maximum</b>	<b>68.4</b>	<b>64.8</b>
<b>Mean</b>	<b>64.20</b>	<b>59.49</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:71

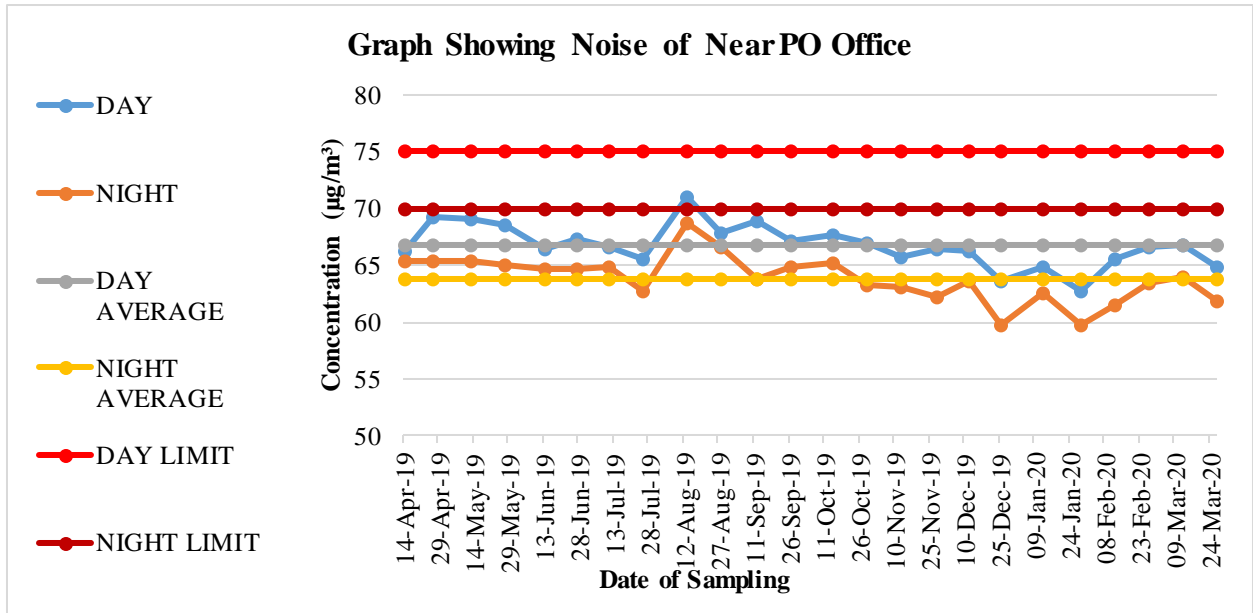
**Area:** Lakhanpur Area

**Project:** Belpahar OCP

**Monitoring Station:** Near PO Office

DATE OF SAMPLING	DAY	NIGHT
14-Apr-19	66.2	65.3
26-Apr-19	69.3	65.4
13-May-19	69.1	65.4
27-May-19	68.5	65.1
13-Jun-19	66.4	64.7
27-Jun-19	67.4	64.7
11-Jul-19	66.7	64.9
25-Jul-19	65.6	62.8
13-Aug-19	71	68.7
28-Aug-19	67.9	66.7
12-Sep-19	68.9	63.8
27-Sep-19	67.1	64.8
15-Oct-19	67.7	65.2
29-Oct-19	66.9	63.2
13-Nov-19	65.7	63.1
28-Nov-19	66.5	62.3
12-Dec-19	66.2	63.7
26-Dec-19	63.7	59.7
13-Jan-20	64.9	62.5
29-Jan-20	62.7	59.8
13-Feb-20	65.5	61.6
27-Feb-20	66.6	63.5
13-Mar-20	66.8	63.9
27-Mar-20	64.8	61.9
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>62.7</b>	<b>59.7</b>
<b>Maximum</b>	<b>71</b>	<b>68.7</b>
<b>Mean</b>	<b>66.75</b>	<b>63.86</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:72

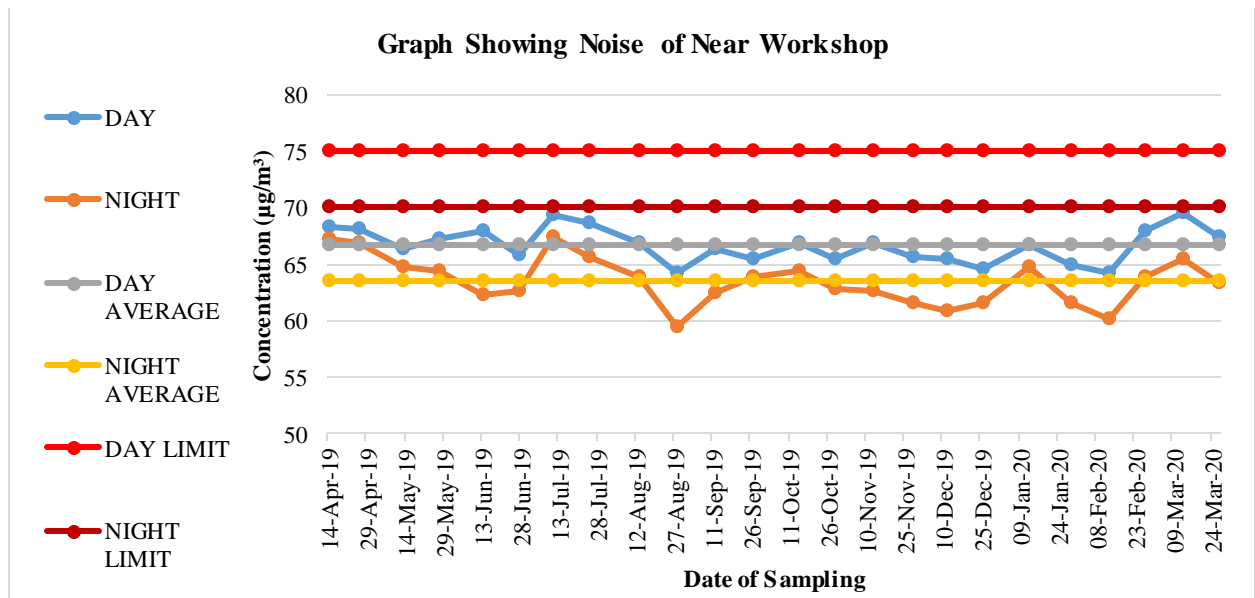
**Area:** Lakhanpur Area

**Project:** Belpahar OCP

**Monitoring Station:** Near Workshop

DATE OF SAMPLING	DAY	NIGHT
14-Apr-19	68.3	67.2
26-Apr-19	68.2	66.9
13-May-19	66.3	64.8
27-May-19	67.3	64.4
13-Jun-19	67.9	62.3
27-Jun-19	65.8	62.6
11-Jul-19	69.4	67.4
25-Jul-19	68.7	65.6
13-Aug-19	66.8	63.9
28-Aug-19	64.3	59.5
12-Sep-19	66.3	62.4
27-Sep-19	65.4	63.9
15-Oct-19	66.9	64.4
29-Oct-19	65.4	62.8
13-Nov-19	66.8	62.7
28-Nov-19	65.7	61.5
12-Dec-19	65.4	60.9
26-Dec-19	64.5	61.5
13-Jan-20	66.7	64.8
29-Jan-20	64.9	61.5
13-Feb-20	64.3	60.2
27-Feb-20	67.9	63.8
13-Mar-20	69.5	65.4
27-Mar-20	67.5	63.3
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>64.3</b>	<b>59.5</b>
<b>Maximum</b>	<b>69.5</b>	<b>67.4</b>
<b>Mean</b>	<b>66.68</b>	<b>63.49</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:73

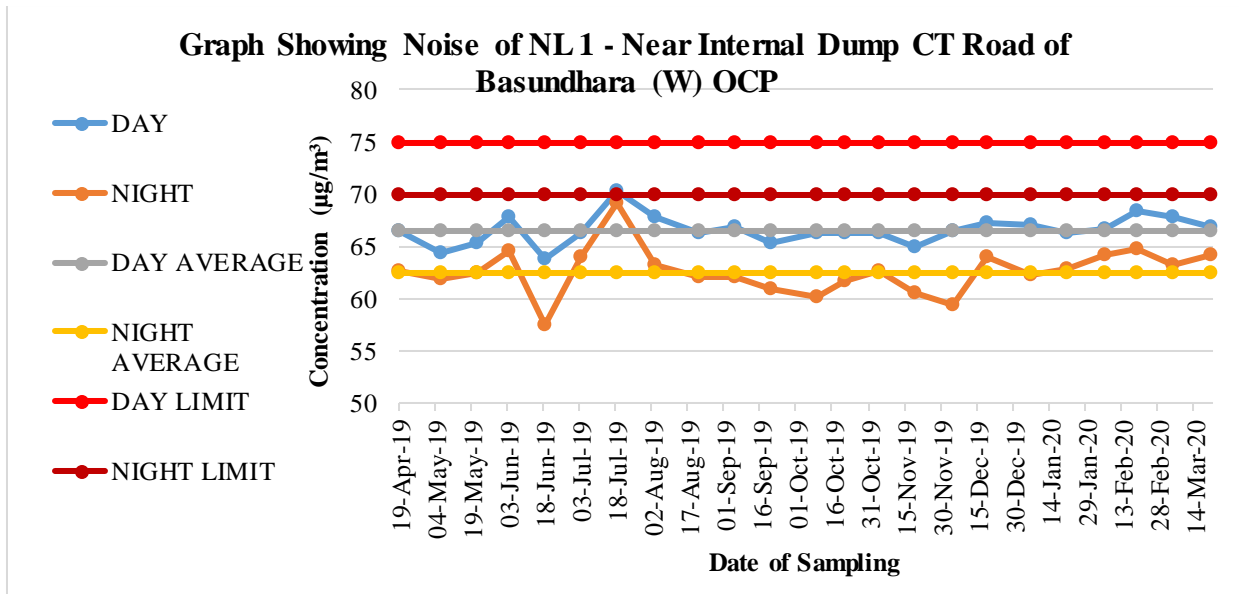
**Area: Basundhara - Garjanbahal Area**

**Project: Basundhara (W) OCP**

**Monitoring Station: NL 1 Near Internal Dump and CT Road of Basundhara (W) OCP**

DATE OF SAMPLING	DAY	NIGHT
13-Apr-19	62.4	59.9
19-Apr-19	66.4	62.7
06-May-19	64.3	61.8
21-May-19	65.4	62.5
03-Jun-19	67.9	64.6
18-Jun-19	63.7	57.4
03-Jul-19	66.3	63.9
18-Jul-19	70.4	69.2
03-Aug-19	67.8	63.2
21-Aug-19	66.3	62.1
05-Sep-19	66.9	62.1
20-Sep-19	65.4	60.9
09-Oct-19	66.2	60.1
21-Oct-19	66.3	61.7
04-Nov-19	66.3	62.7
19-Nov-19	64.9	60.5
05-Dec-19	66.4	59.3
19-Dec-19	67.2	63.9
06-Jan-20	67.1	62.2
21-Jan-20	66.2	62.8
06-Feb-20	66.7	64.2
19-Feb-20	68.4	64.7
05-Mar-20	67.8	63.2
21-Mar-20	66.8	64.2
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>62.4</b>	<b>57.4</b>
<b>Maximum</b>	<b>70.4</b>	<b>69.2</b>
<b>Mean</b>	<b>66.40</b>	<b>62.49</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:74

Area: Basundhara - Garjanbahal Area

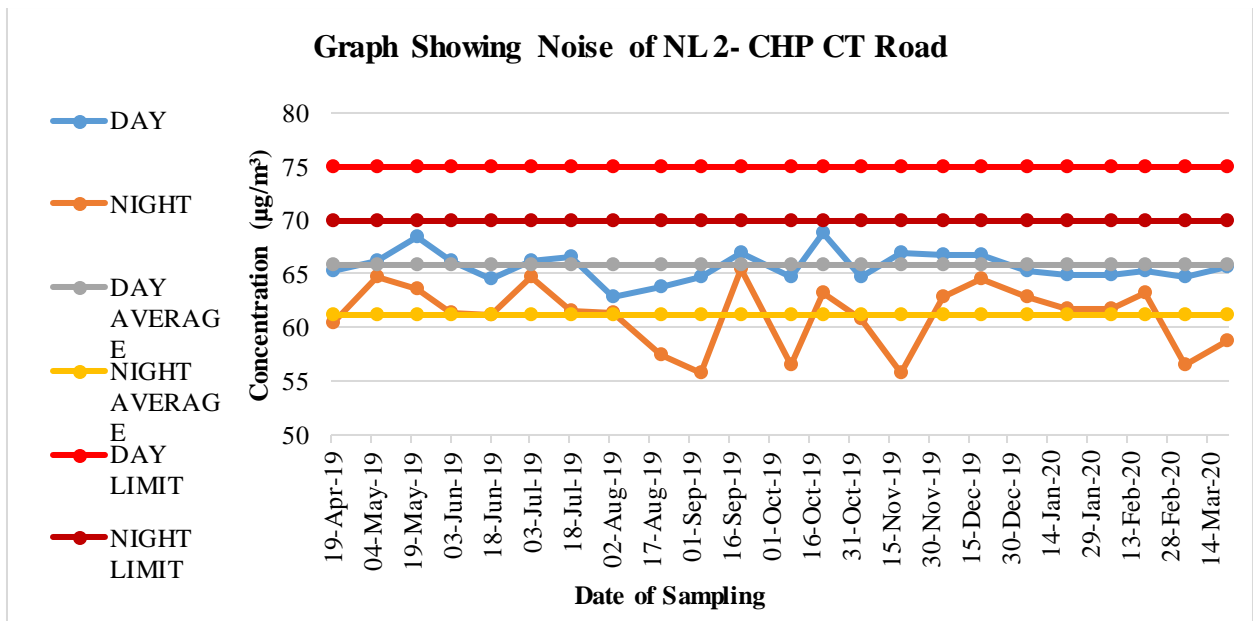
Project: Basundhara (W) OCP

Monitoring Station: NL 2 - CHP CT Road

DATE OF SAMPLING	DAY	NIGHT
13-Apr-19	67.5	64
19-Apr-19	65.2	60.5
06-May-19	66.2	64.7
21-May-19	68.5	63.6
03-Jun-19	66.3	61.4
18-Jun-19	64.6	61.2
03-Jul-19	66.2	64.8
18-Jul-19	66.5	61.6
03-Aug-19	62.8	61.3
21-Aug-19	63.7	57.4
05-Sep-19	64.7	55.8
20-Sep-19	66.9	65.4
09-Oct-19	64.7	56.4
21-Oct-19	68.9	63.3
04-Nov-19	64.7	60.7
19-Nov-19	66.9	55.8
05-Dec-19	66.7	62.8
19-Dec-19	66.7	64.5
06-Jan-20	65.3	62.8
21-Jan-20	64.9	61.7
06-Feb-20	64.9	61.7
19-Feb-20	65.3	63.2
05-Mar-20	64.7	56.4
21-Mar-20	65.7	58.8
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>62.8</b>	<b>55.8</b>
<b>Maximum</b>	<b>68.9</b>	<b>65.4</b>
<b>Mean</b>	<b>65.77</b>	<b>61.24</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph Showing Noise of NL 2- CHP CT Road



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:75

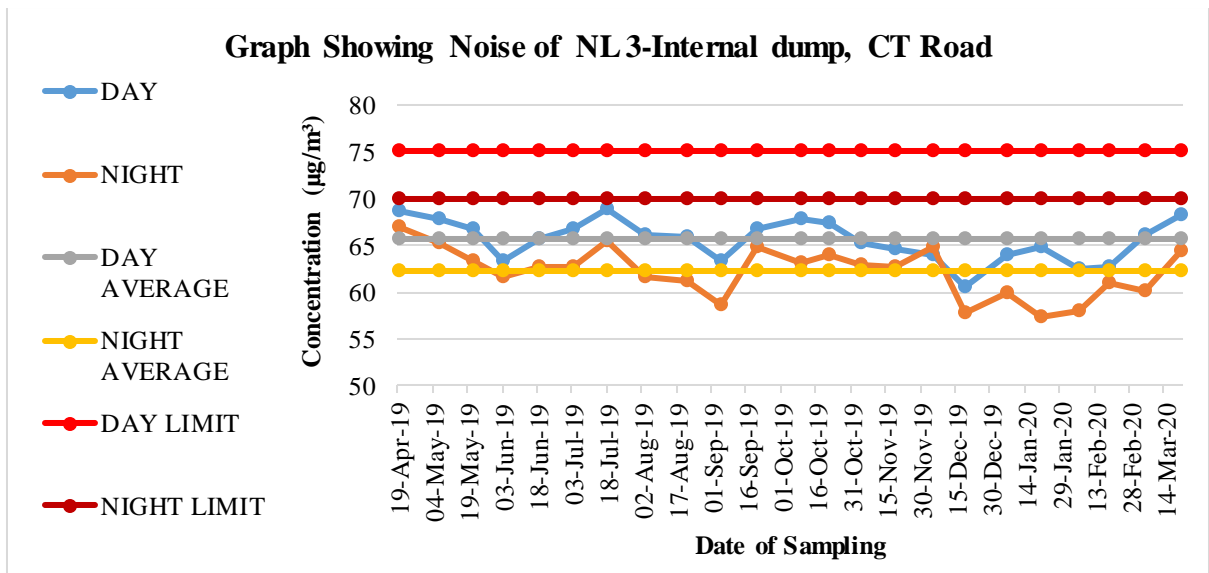
Area: Basundhara - Garjanbahal Area

Project: Basundhara (W) OCP

Monitoring Station: NL 3- Internal Dump, CT Road

DATE OF SAMPLING	DAY	NIGHT
13-Apr-19	68.6	65.7
19-Apr-19	68.7	66.9
06-May-19	67.8	65.3
21-May-19	66.7	63.3
03-Jun-19	63.4	61.7
18-Jun-19	65.8	62.6
03-Jul-19	66.7	62.7
18-Jul-19	68.9	65.5
03-Aug-19	66.1	61.7
21-Aug-19	65.9	61.2
05-Sep-19	63.4	58.6
20-Sep-19	66.7	64.9
09-Oct-19	67.9	63.2
21-Oct-19	67.4	63.9
04-Nov-19	65.2	62.9
19-Nov-19	64.7	62.7
05-Dec-19	63.9	64.9
19-Dec-19	60.6	57.7
06-Jan-20	63.9	59.9
21-Jan-20	64.9	57.3
06-Feb-20	62.4	57.9
19-Feb-20	62.6	60.9
05-Mar-20	66.2	60.1
21-Mar-20	68.2	64.4
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>60.6</b>	<b>57.3</b>
<b>Maximum</b>	<b>68.9</b>	<b>66.9</b>
<b>Mean</b>	<b>65.69</b>	<b>62.33</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:76

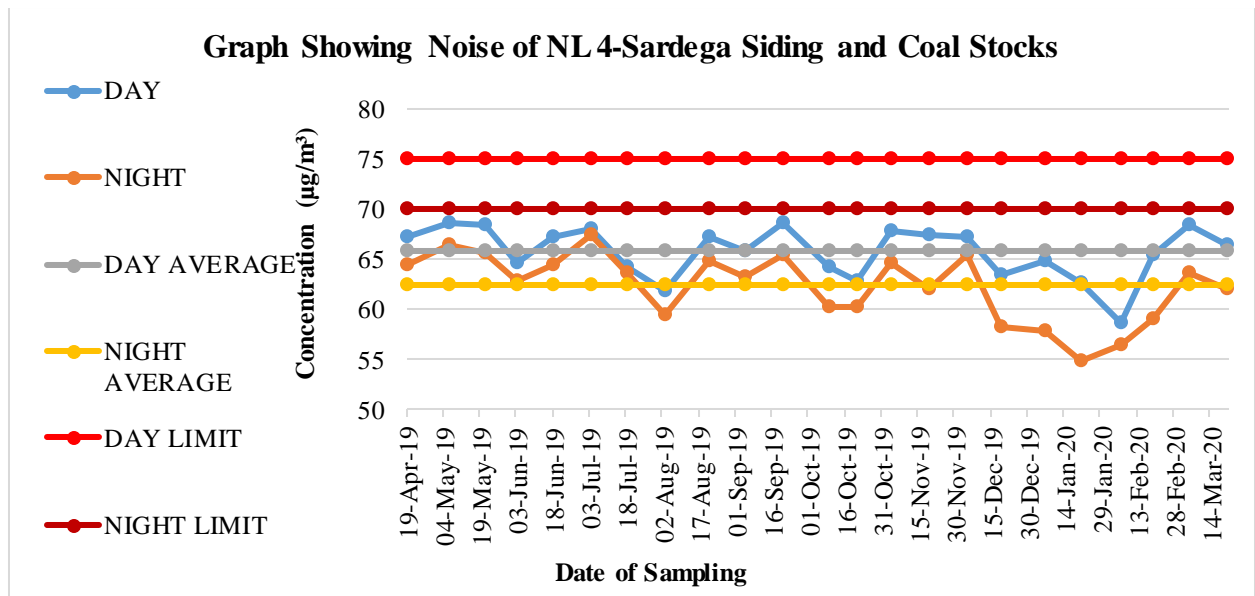
**Area:** Basundhara - Garjanbahal Area

**Project:** Basdunhara (W) OCP

**Monitoring Station:** NL 4 – Sardega Siding and Coal Stocks

DATE OF SAMPLING	DAY	NIGHT
21-Mar-20	66.5	62.1
05-Mar-20	68.4	63.7
19-Feb-20	65.4	59
06-Feb-20	58.6	56.4
21-Jan-20	62.7	54.9
06-Jan-20	64.8	57.9
19-Dec-19	63.5	58.2
05-Dec-19	67.2	65.4
19-Nov-19	67.4	62.1
04-Nov-19	67.9	64.7
21-Oct-19	62.9	60.3
09-Oct-19	64.3	60.2
20-Sep-19	68.6	65.5
05-Sep-19	65.9	63.2
21-Aug-19	67.2	64.9
03-Aug-19	61.8	59.4
18-Jul-19	64.3	63.7
03-Jul-19	68	67.4
18-Jun-19	67.2	64.4
03-Jun-19	64.7	62.8
21-May-19	68.4	65.6
06-May-19	68.7	66.4
19-Apr-19	67.3	64.5
13-Apr-19	69.4	67.8
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>58.6</b>	<b>54.9</b>
<b>Maximum</b>	<b>69.4</b>	<b>67.8</b>
<b>Mean</b>	<b>65.88</b>	<b>62.52</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:77

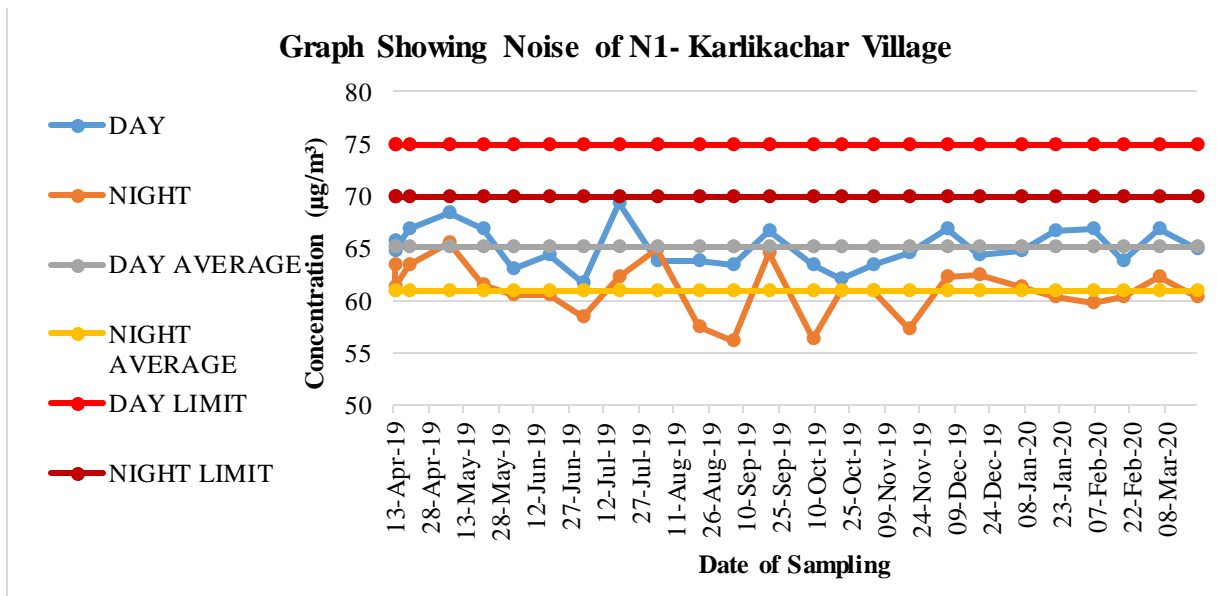
**Area:** Basundhara - Garjanbahal Area

**Project:** Garjanbahal OCP

**Monitoring Station:** N1-Karlikachar

DATE OF SAMPLING	DAY	NIGHT
13-Apr-19	64.7	61.3
19-Apr-19	66.9	63.4
06-May-19	68.4	65.6
21-May-19	66.9	61.4
03-Jun-19	63.1	60.6
18-Jun-19	64.3	60.5
03-Jul-19	61.7	58.4
18-Jul-19	69.4	62.3
03-Aug-19	63.7	64.9
21-Aug-19	63.7	57.4
05-Sep-19	63.4	56.2
20-Sep-19	66.7	64.6
09-Oct-19	63.4	56.3
21-Oct-19	62.1	60.9
04-Nov-19	63.4	60.9
19-Nov-19	64.6	57.3
05-Dec-19	66.9	62.3
19-Dec-19	64.3	62.4
06-Jan-20	64.7	61.3
21-Jan-20	66.7	60.4
06-Feb-20	66.9	59.8
19-Feb-20	63.8	60.4
05-Mar-20	66.9	62.3
21-Mar-20	64.9	60.3
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>61.7</b>	<b>56.2</b>
<b>Maximum</b>	<b>69.4</b>	<b>65.6</b>
<b>Mean</b>	<b>65.09</b>	<b>60.98</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:78

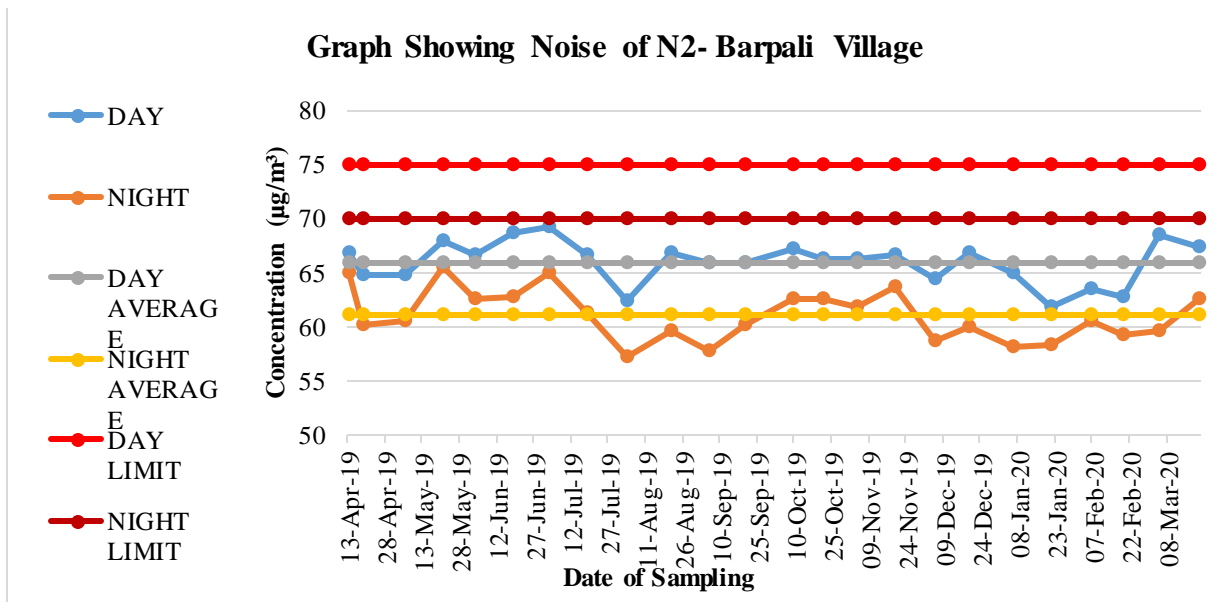
**Area:** Basundhara - Garjanbahal Area

**Project:** Garjanbahal OCP

**Monitoring Station:** N2- Barpali Village

DATE OF SAMPLING	DAY	NIGHT
13-Apr-19	66.8	64.9
19-Apr-19	64.7	60.2
06-May-19	64.7	60.5
21-May-19	68	65.6
03-Jun-19	66.7	62.5
18-Jun-19	68.7	62.7
03-Jul-19	69.3	64.9
18-Jul-19	66.7	61.3
03-Aug-19	62.3	57.3
21-Aug-19	66.9	59.6
05-Sep-19	65.9	57.8
20-Sep-19	65.8	60.1
09-Oct-19	67.2	62.6
21-Oct-19	66.3	62.5
04-Nov-19	66.2	61.8
19-Nov-19	66.7	63.6
05-Dec-19	64.5	58.6
19-Dec-19	66.9	59.9
06-Jan-20	64.9	58.1
21-Jan-20	61.8	58.4
06-Feb-20	63.5	60.6
19-Feb-20	62.7	59.3
05-Mar-20	68.5	59.6
21-Mar-20	67.4	62.6
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>61.8</b>	<b>57.3</b>
<b>Maximum</b>	<b>69.3</b>	<b>65.6</b>
<b>Mean</b>	<b>65.93</b>	<b>60.87</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:79

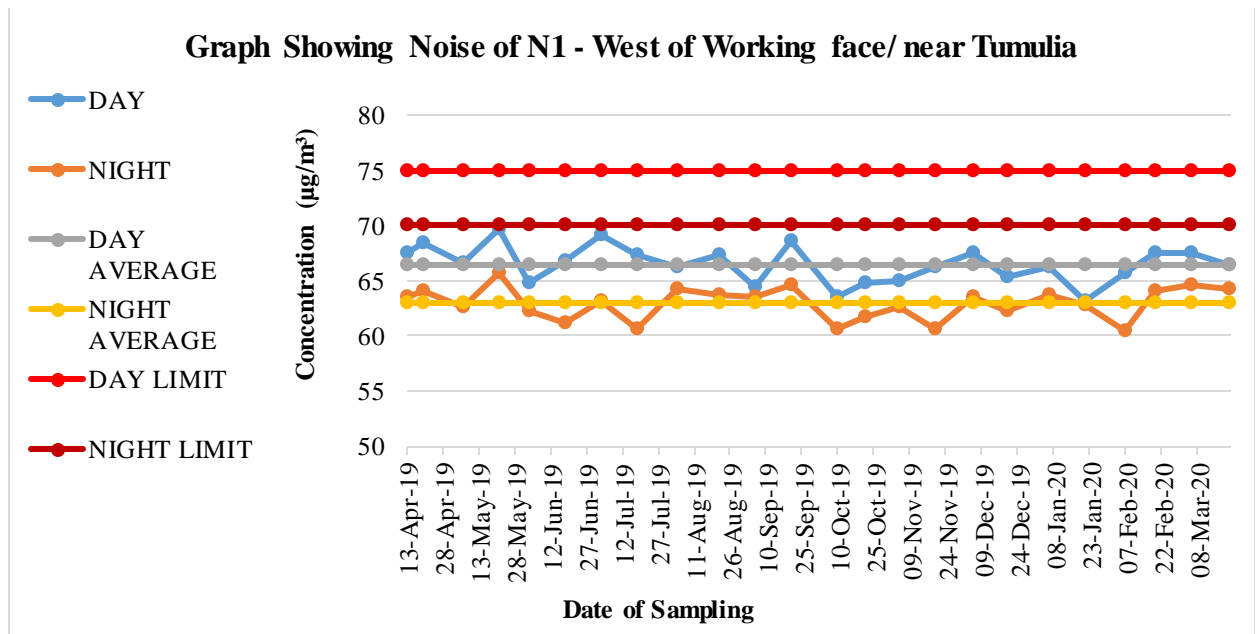
Area: Basundhara - Garjanbahal Area

Project: Kulda OCP

Monitoring Station: N1- West of Working face / Near Tumulia

DATE OF SAMPLING	DAY	NIGHT
13-Apr-19	67.5	63.6
19-Apr-19	68.5	64.1
06-May-19	66.7	62.7
21-May-19	69.7	65.8
03-Jun-19	64.8	62.3
18-Jun-19	66.8	61.2
03-Jul-19	69.1	63.1
18-Jul-19	67.3	60.6
03-Aug-19	66.3	64.2
21-Aug-19	67.4	63.8
05-Sep-19	64.4	63.5
20-Sep-19	68.6	64.7
09-Oct-19	63.6	60.7
21-Oct-19	64.8	61.7
04-Nov-19	64.9	62.6
19-Nov-19	66.2	60.7
05-Dec-19	67.6	63.6
19-Dec-19	65.4	62.3
06-Jan-20	66.2	63.7
21-Jan-20	63.2	62.9
06-Feb-20	65.8	60.5
19-Feb-20	67.5	64.1
05-Mar-20	67.5	64.6
21-Mar-20	66.5	64.2
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>63.2</b>	<b>60.5</b>
<b>Maximum</b>	<b>69.7</b>	<b>65.8</b>
<b>Mean</b>	<b>66.51</b>	<b>62.97</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:80

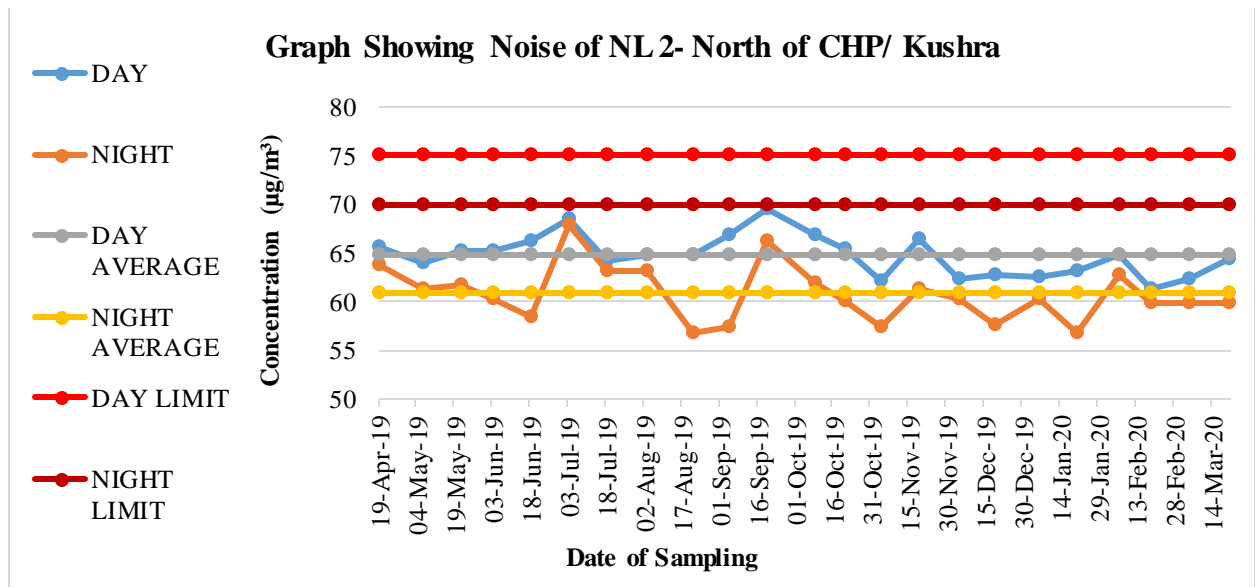
**Area:** Basundhara- Garjanbahal Area

**Project:** Kulda OCP

**Monitoring Station:** NL 2 –North of CHP /Kushra

DATE OF SAMPLING	DAY	NIGHT
13-Apr-19	65.8	63.4
19-Apr-19	65.6	63.8
06-May-19	63.9	61.4
21-May-19	65.3	61.7
03-Jun-19	65.3	60.2
18-Jun-19	66.2	58.4
03-Jul-19	68.5	67.8
18-Jul-19	64.2	63.2
03-Aug-19	64.7	63.2
21-Aug-19	64.7	56.8
05-Sep-19	66.8	57.3
20-Sep-19	69.6	66.3
09-Oct-19	66.9	62
21-Oct-19	65.4	60.1
04-Nov-19	62.1	57.4
19-Nov-19	66.5	61.3
05-Dec-19	62.4	60.3
19-Dec-19	62.7	57.6
06-Jan-20	62.6	60.3
21-Jan-20	63.1	56.7
06-Feb-20	64.7	62.7
19-Feb-20	61.4	59.8
05-Mar-20	62.4	59.8
21-Mar-20	64.4	59.8
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>61.4</b>	<b>56.7</b>
<b>Maximum</b>	<b>69.6</b>	<b>67.8</b>
<b>Mean</b>	<b>64.80</b>	<b>60.89</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:81

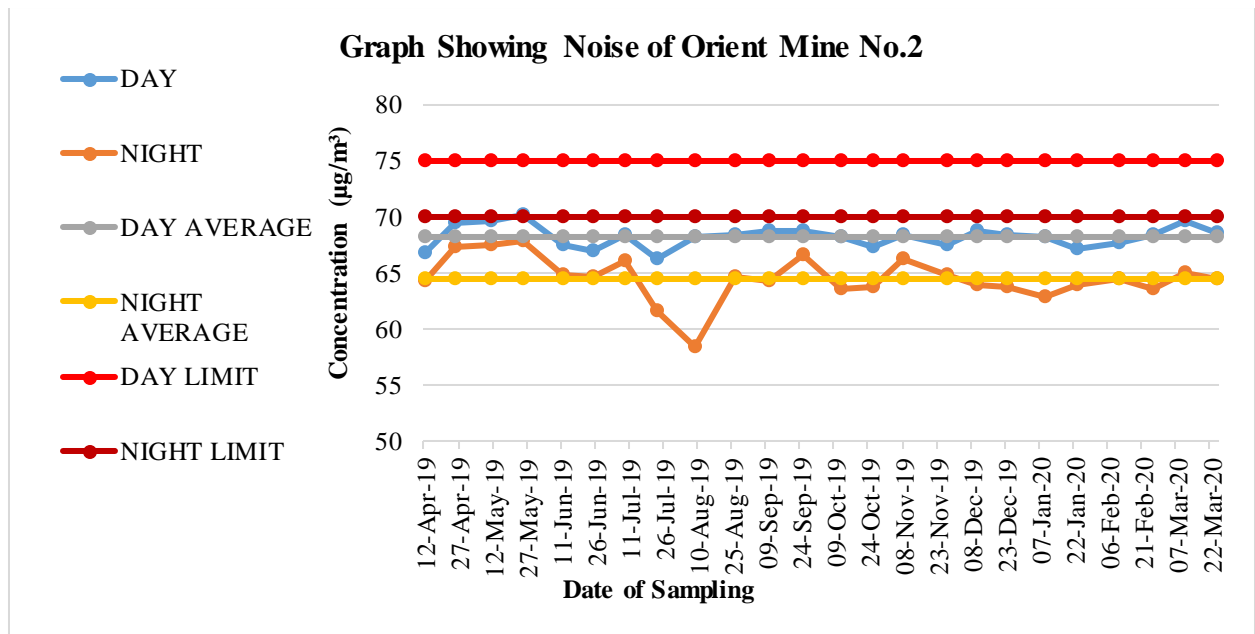
Area: Orient Area

Project: Orient No 2

Monitoring Station: Orient Mine No 2

DATE OF SAMPLING	DAY	NIGHT
12-Apr-19	66.7	64.2
25-Apr-19	69.4	67.3
11-May-19	69.7	67.4
25-May-19	70.1	67.8
12-Jun-19	67.4	64.8
25-Jun-19	66.9	64.7
09-Jul-19	68.3	66.1
23-Jul-19	66.2	61.5
09-Aug-19	68.2	58.3
26-Aug-19	68.4	64.7
10-Sep-19	68.7	64.3
25-Sep-19	68.7	66.5
12-Oct-19	68.2	63.5
26-Oct-19	67.3	63.8
08-Nov-19	68.4	66.2
27-Nov-19	67.4	64.8
10-Dec-19	68.7	63.9
24-Dec-19	68.4	63.7
09-Jan-20	68.2	62.8
23-Jan-20	67.2	63.9
11-Feb-20	67.6	64.5
26-Feb-20	68.4	63.5
11-Mar-20	69.6	64.9
25-Mar-20	68.6	64.5
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>66.2</b>	<b>58.3</b>
<b>Maximum</b>	<b>70.1</b>	<b>67.8</b>
<b>Mean</b>	<b>68.20</b>	<b>64.48</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:82

Area: Orient Area

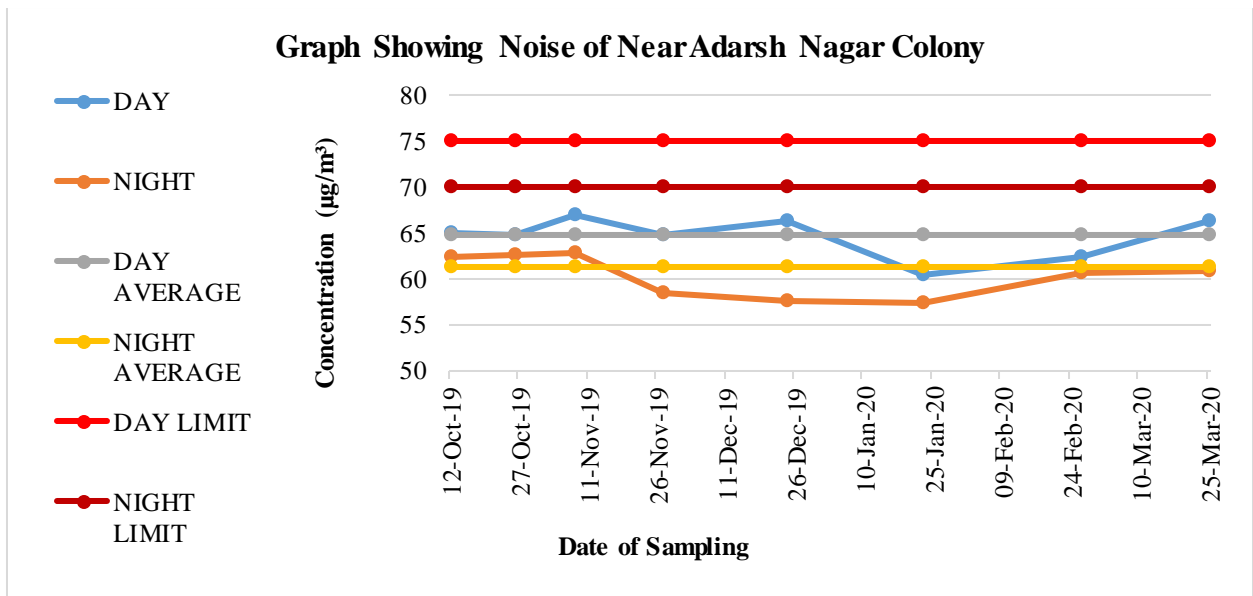
Project: Orient No 2

Monitoring Station: Near Adarsh Nagar Colony

DATE OF SAMPLING	DAY	NIGHT
12-Apr-19	65.2	62.5
25-Apr-19	64.7	63.9
11-May-19	66.7	63.7
25-May-19	67.4	64
12-Jun-19	63.5	60.9
25-Jun-19	64.2	61.3
25-Jun-19	64.2	61.3
09-Jul-19	64.7	57.7
23-Jul-19	62.3	59.2
09-Aug-19	63.2	61.9
26-Aug-19	66.3	62.7
10-Sep-19	64.5	61.7
25-Sep-19	66.6	64.5
12-Oct-19	64.9	62.4
26-Oct-19	64.7	62.6
08-Nov-19	66.9	62.8
27-Nov-19	64.8	58.4
10-Dec-19	64.8	62.7
24-Dec-19	66.2	57.6
09-Jan-20	63.7	61.7
23-Jan-20	60.4	57.4
11-Feb-20	56.9	54.8
26-Feb-20	62.3	60.7
11-Mar-20	66.9	62.6
25-Mar-20	66.3	60.9
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>62.3</b>	<b>57.7</b>
<b>Maximum</b>	<b>67.4</b>	<b>64.5</b>
<b>Mean</b>	<b>64.93</b>	<b>61.98</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph Showing Noise of Near Adarsh Nagar Colony



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:83

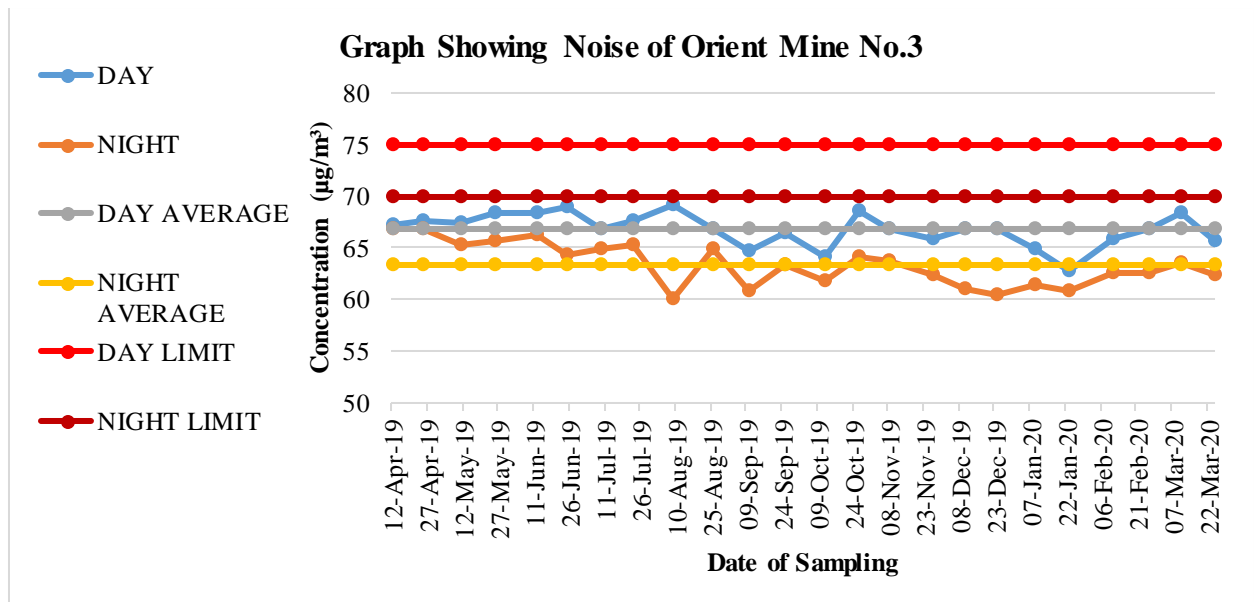
**Area:** Orient Area

**Project:** Orient No 3

**Monitoring Station:** Orient Mine No 3

DATE OF SAMPLING	DAY	NIGHT
25-Apr-19	67.6	66.8
11-May-19	67.4	65.3
25-May-19	68.4	65.6
12-Jun-19	68.3	66.3
25-Jun-19	68.9	64.3
09-Jul-19	66.8	64.8
23-Jul-19	67.6	65.2
09-Aug-19	69.1	60.1
26-Aug-19	66.9	64.8
10-Sep-19	64.7	60.9
25-Sep-19	66.5	63.3
12-Oct-19	64.2	61.7
26-Oct-19	68.6	64.2
08-Nov-19	66.8	63.7
27-Nov-19	65.9	62.3
10-Dec-19	66.9	61
24-Dec-19	66.8	60.4
09-Jan-20	64.9	61.4
23-Jan-20	62.7	60.9
11-Feb-20	65.8	62.6
26-Feb-20	66.9	62.5
11-Mar-20	68.3	63.6
25-Mar-20	65.7	62.4
12-Apr-19	67.3	66.8
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>62.7</b>	<b>60.1</b>
<b>Maximum</b>	<b>69.1</b>	<b>66.8</b>
<b>Mean</b>	<b>66.79</b>	<b>63.37</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:84

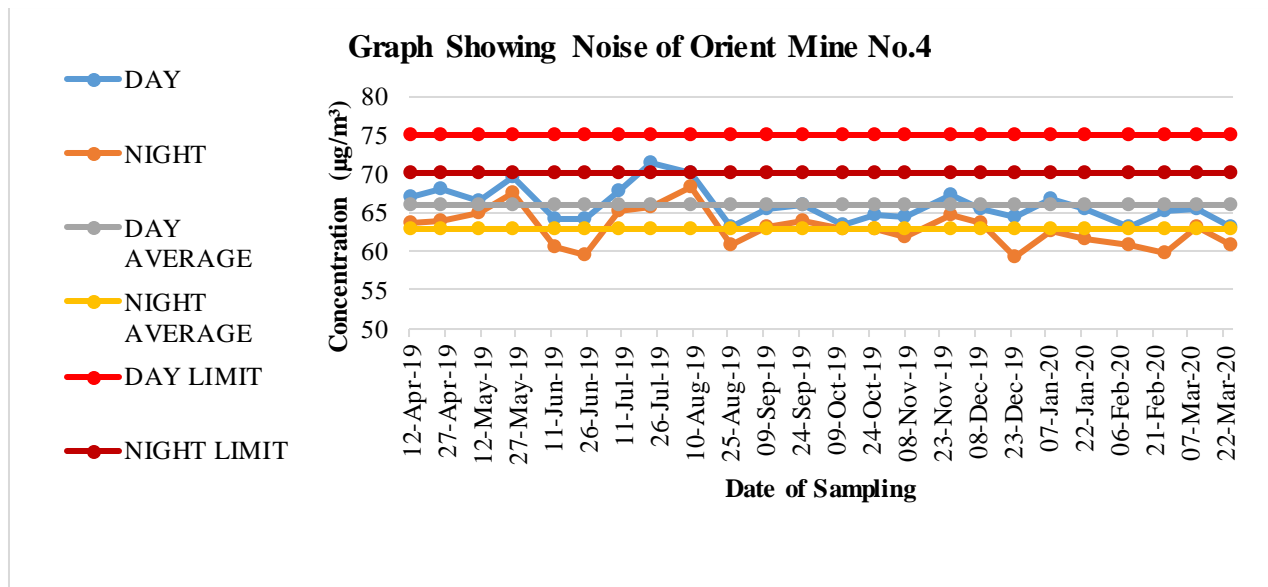
Area: Orient Area

Project: Orient No 4

Monitoring Station: Orient Mine No 4

DATE OF SAMPLING	DAY	NIGHT
12-Apr-19	67	63.6
25-Apr-19	67.9	64
11-May-19	66.5	64.9
25-May-19	69.7	67.4
12-Jun-19	64.2	60.5
25-Jun-19	64.1	59.5
09-Jul-19	67.7	65.3
23-Jul-19	71.5	65.6
09-Aug-19	70.2	68.4
26-Aug-19	63.2	60.7
10-Sep-19	65.4	63.2
25-Sep-19	65.9	63.8
12-Oct-19	63.4	62.8
26-Oct-19	64.7	62.9
08-Nov-19	64.4	61.9
27-Nov-19	67.3	64.6
10-Dec-19	65.4	63.6
24-Dec-19	64.3	59.3
09-Jan-20	66.8	62.7
23-Jan-20	65.5	61.7
11-Feb-20	63.2	60.9
26-Feb-20	65.3	59.8
11-Mar-20	65.4	63.2
25-Mar-20	63.2	60.8
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>63.2</b>	<b>59.3</b>
<b>Maximum</b>	<b>71.5</b>	<b>68.4</b>
<b>Mean</b>	<b>65.93</b>	<b>62.96</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:85

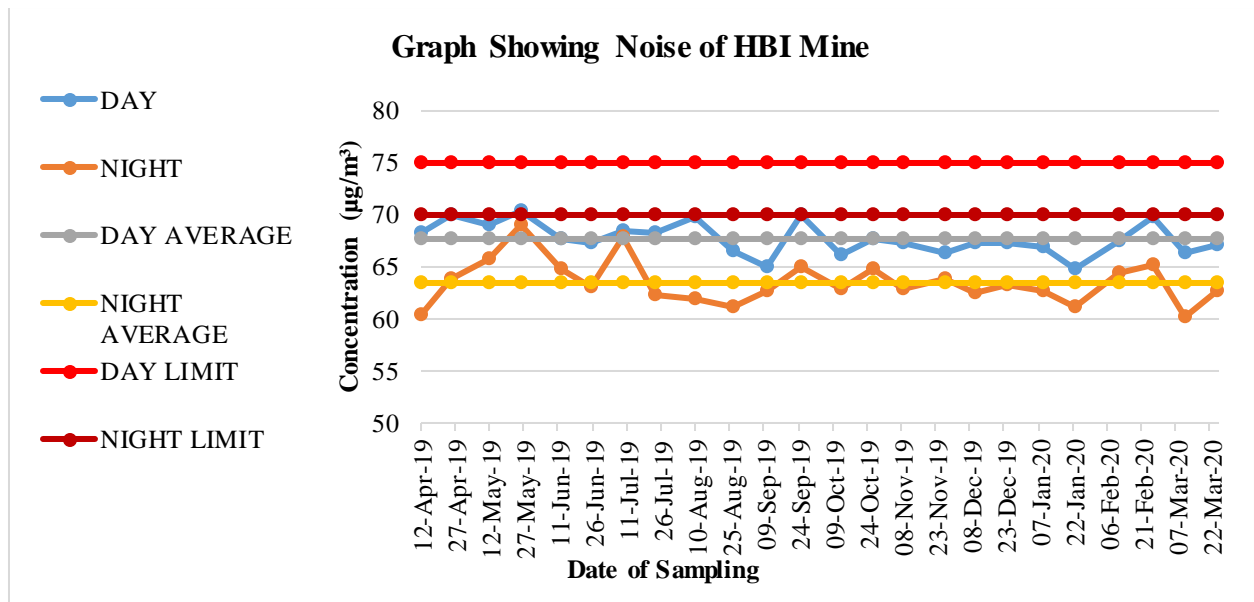
Area: Orient Area

Project: Orient No 4

Monitoring Station: HBI Mine

DATE OF SAMPLING	DAY	NIGHT
12-Apr-19	68.3	60.3
25-Apr-19	69.9	63.8
11-May-19	68.9	65.7
25-May-19	70.4	68.9
12-Jun-19	67.6	64.8
25-Jun-19	67.2	63.1
09-Jul-19	68.4	67.9
23-Jul-19	68.2	62.2
09-Aug-19	69.7	61.9
26-Aug-19	66.4	61.2
10-Sep-19	64.9	62.7
25-Sep-19	69.9	64.9
12-Oct-19	66.1	62.9
26-Oct-19	67.6	64.8
08-Nov-19	67.3	62.8
27-Nov-19	66.2	63.7
10-Dec-19	67.2	62.4
24-Dec-19	67.2	63.2
09-Jan-20	66.9	62.7
23-Jan-20	64.7	61.2
11-Feb-20	67.4	64.3
26-Feb-20	69.7	65.2
11-Mar-20	66.2	60.1
25-Mar-20	67.1	62.6
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>Minimum</b>	<b>64.7</b>	<b>60.1</b>
<b>Maximum</b>	<b>70.4</b>	<b>68.9</b>
<b>Mean</b>	<b>67.64</b>	<b>63.47</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:86

Area: Orient Area

Project: Orient No 4

Monitoring Station: Bundia Colony Pump House

DATE OF SAMPLING	DAY	NIGHT
12-Apr-19	67.3	60.7
25-Apr-19	66.1	64.3
11-May-19	65.6	62.5
25-May-19	68.3	64.2
12-Jun-19	64.2	58.6
25-Jun-19	64.8	62.5
09-Jul-19	65.8	62.4
23-Jul-19	62.1	59
09-Aug-19	66.2	57.1
26-Aug-19	62.1	56.8
10-Sep-19	63.8	60.4
25-Sep-19	66.7	62.7
12-Oct-19	64.3	60.7
26-Oct-19	64.2	58.6
08-Nov-19	63.8	58.6
27-Nov-19	64.8	61.5
10-Dec-19	64.7	59.8
24-Dec-19	63.9	56.4
09-Jan-20	64.7	59.3
23-Jan-20	63.2	61.5
11-Feb-20	64.8	61.7
26-Feb-20	63.6	58.1
11-Mar-20	63.4	60.9
25-Mar-20	64.8	60.4
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
<b>MIN</b>	<b>62.1</b>	<b>56.4</b>
<b>MAX</b>	<b>68.3</b>	<b>64.3</b>
<b>MEAN</b>	<b>64.72</b>	<b>60.36</b>
<b>Noise Standard</b>	<b>75</b>	<b>70</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:87

Area: Orient Area

Project: Orient No 4

Monitoring Station: Rampur Officer's Guest House

DATE OF SAMPLING	DAY	NIGHT
12-Apr-19	64.8	61.4
25-Apr-19	64.7	62.2
11-May-19	64.7	60.8
25-May-19	64.8	61.7
12-Jun-19	65.7	60.2
25-Jun-19	66.5	64.8
09-Jul-19	64.3	61.7
23-Jul-19	61.2	57.6
09-Aug-19	63.8	58.6
26-Aug-19	64.9	60.3
10-Sep-19	62.8	58.9
25-Sep-19	65.9	61.7
12-Oct-19	66.9	62.4
26-Oct-19	65.7	60.8
08-Nov-19	66.9	61.2
27-Nov-19	63.2	58.3
10-Dec-19	63.4	57.4
24-Dec-19	60.4	59.2
09-Jan-20	65.9	62.6
23-Jan-20	66.9	64.7
11-Feb-20	62.9	60.8
26-Feb-20	60.4	57.2
11-Mar-20	64.8	58.4
25-Mar-20	62.5	59.2
<b>Brief Statistic</b>	<b>Day</b>	<b>Night</b>
MIN	60.4	57.2
MAX	66.9	64.8
MEAN	64.33	60.50
Noise Standard	75	70



# **EFFLUENT WATER QUALITY MONITORING**

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## 6. EFFLUENT QUALITY DATA

Table:88

Area: Ib valley

Project: Samleswari OCP

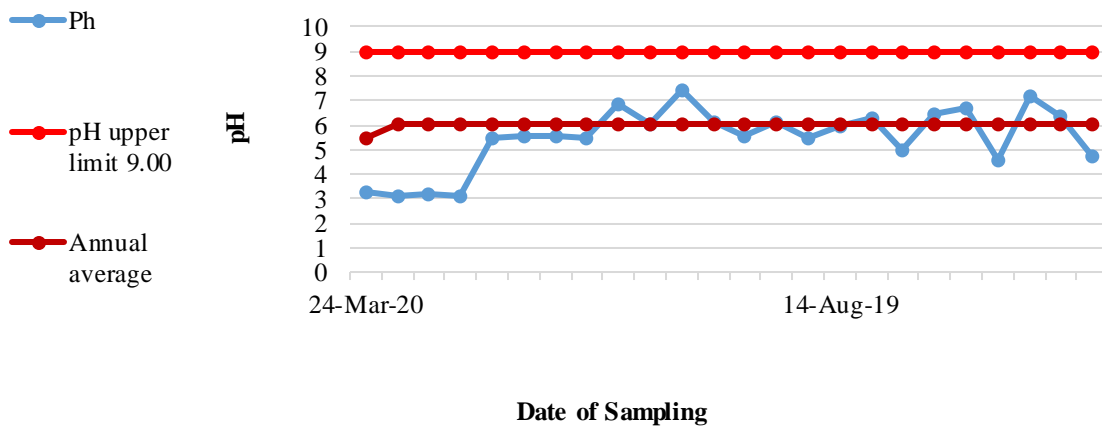
Monitoring station: Outlet of Sedimentation Pond (MDTP)

Date of Sampling	Ph	Oil & Grease	COD	TSS
12-Apr-19	4.70	<4.0	26	8
27-Apr-19	6.34	<4.0	39	16
13-May-19	7.18	<4.0	39	12
30-May-19	4.58	<4.0	23	3.2
14-Jun-19	6.69	<4.0	44	32
28-Jun-19	6.42	<4.0	27	16
12-Jul-19	4.95	<4.0	22	60
27-Jul-19	6.25	<4.0	25	44
14-Aug-19	5.96	<4.0	22	28
29-Aug-19	5.44	<4.0	22	20
14-Sep-19	6.14	<4.0	22	68
30-Sep-19	5.52	<4.0	20	16
16-Oct-19	6.16	<4.0	16	24
30-Oct-19	7.39	<4.0	18	24
08-Nov-19	6.08	<4.0	20	16
24-Nov-19	6.86	<4.0	26	20
13-Dec-19	5.51	<4.0	16	12
27-Dec-19	5.52	<4.0	20	24
11-Jan-20	5.52	<4.0	20	32
29-Jan-20	5.51	<4.0	22	32
11-Feb-20	3.13	<4.0	14	24
29-Feb-20	3.15	<4.0	34	12
14-Mar-20	3.11	<4.0	24	40
24-Mar-20	3.26	<4.0	28	48

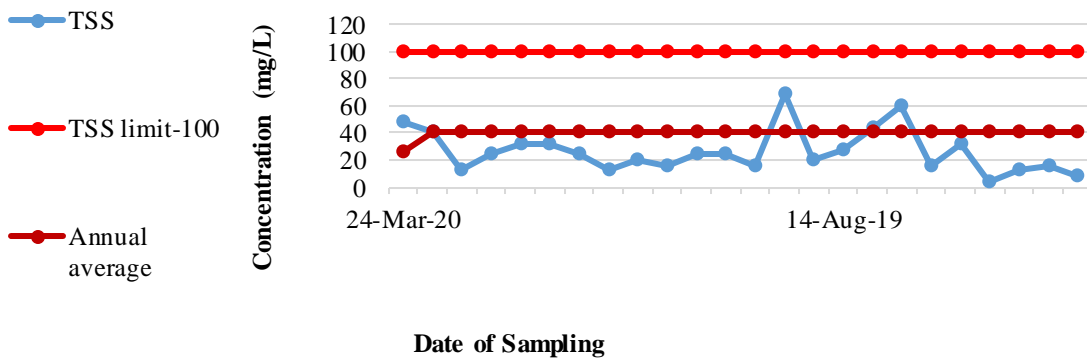


ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

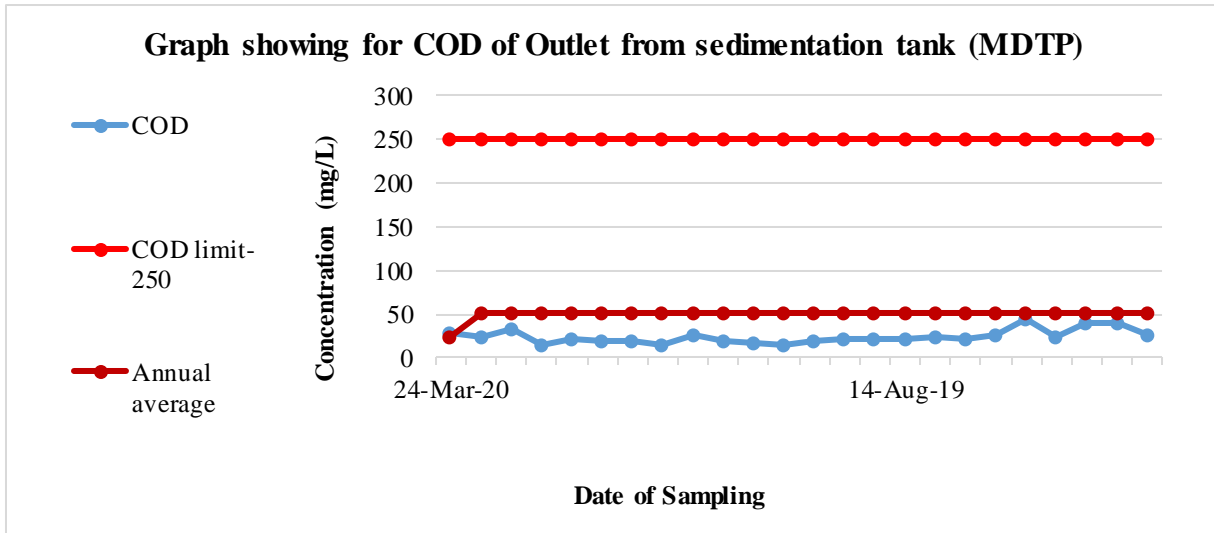
Graph showing for pH of Outlet from sedimentation tank (MDTP)



Graph showing for TSS of Outlet from sedimentation tank (MDTP)



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:89

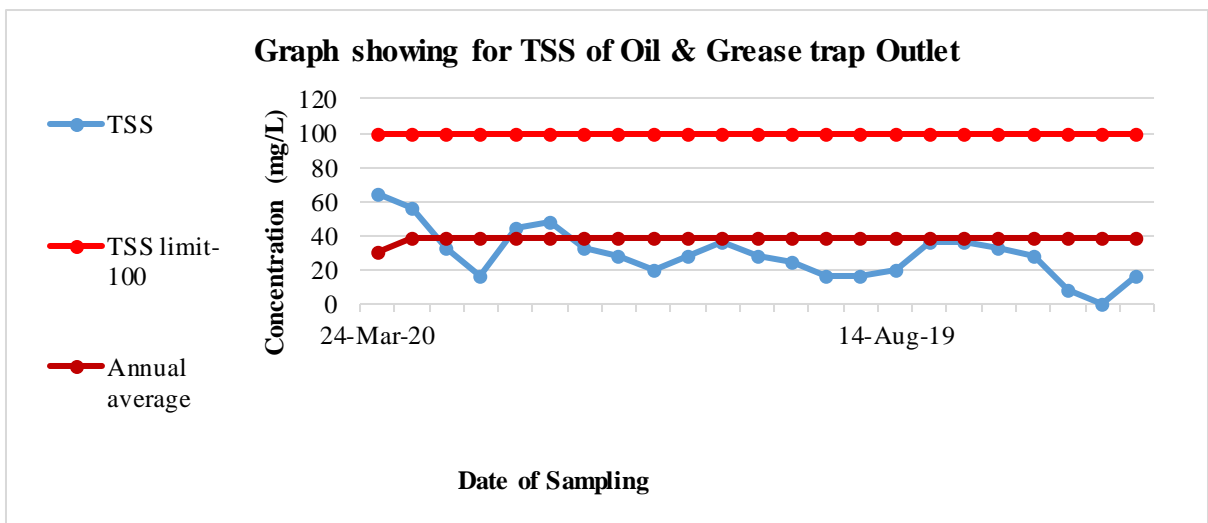
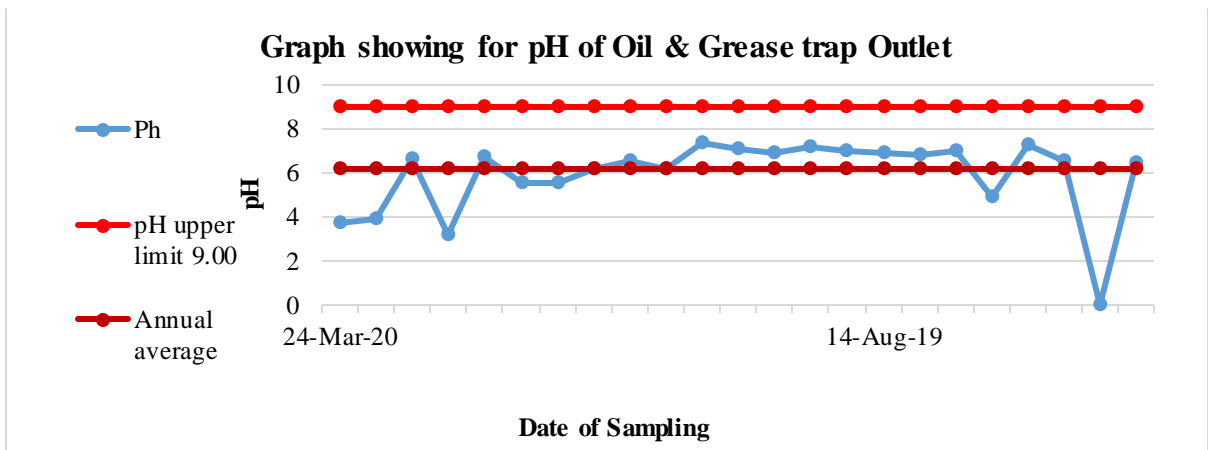
Area: Ib valley

Project: Samleswari OCP

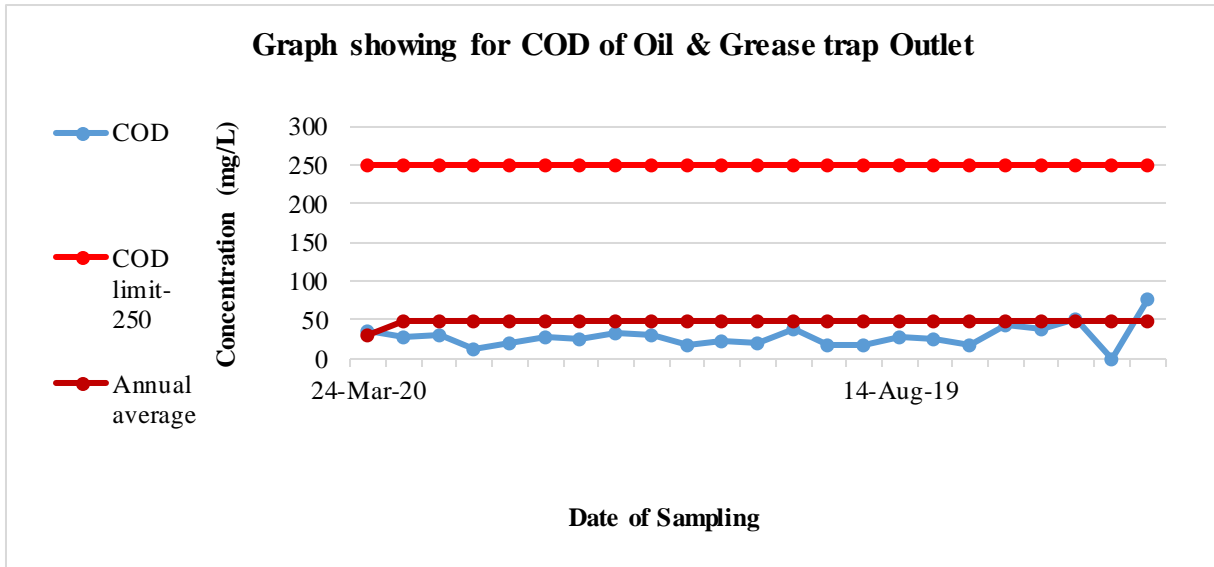
Monitoring station: Oil & Grease Trap Outlet

Date of Sampling	Ph	Oil & Grease	COD	TSS
12-Apr-19	6.42	<4.0	76	16
27-Apr-19	Dry			
30-May-19	6.49	<4.0	51	7.6
14-Jun-19	7.26	<4.0	39	28
28-Jun-19	4.92	<4.0	43	32
12-Jul-19	6.97	<4.0	18	36
27-Jul-19	6.80	<4.0	26	36
14-Aug-19	6.89	<4.0	28	20
29-Aug-19	6.96	<4.0	18	16
14-Sep-19	7.18	<4.0	18	16
30-Sep-19	6.86	<4.0	38	24
16-Oct-19	7.07	<4.0	20	28
30-Oct-19	7.32	<4.0	22	36
08-Nov-19	6.14	<4.0	18	28
24-Nov-19	6.53	<4.0	30	20
13-Dec-19	6.17	<4.0	34	28
27-Dec-19	5.54	<4.0	26	32
11-Jan-20	5.50	<4.0	28	48
29-Jan-20	6.72	<4.0	20	44
11-Feb-20	3.17	<4.0	12	16
29-Feb-20	6.58	<4.0	30	32
14-Mar-20	3.88	<4.0	28	56
24-Mar-20	3.73	<4.0	36	64

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:90

Area: Ib valley

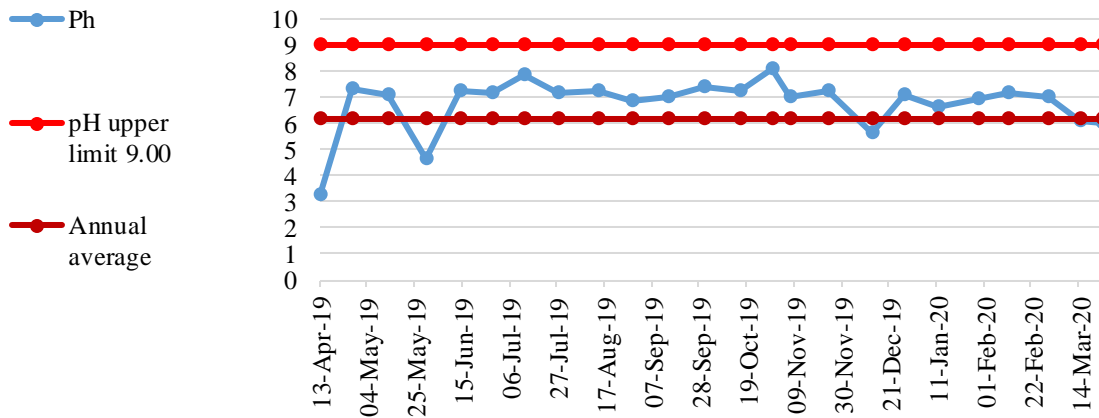
Project: Samleswari OCP

Monitoring station: DETP/STP Outlet

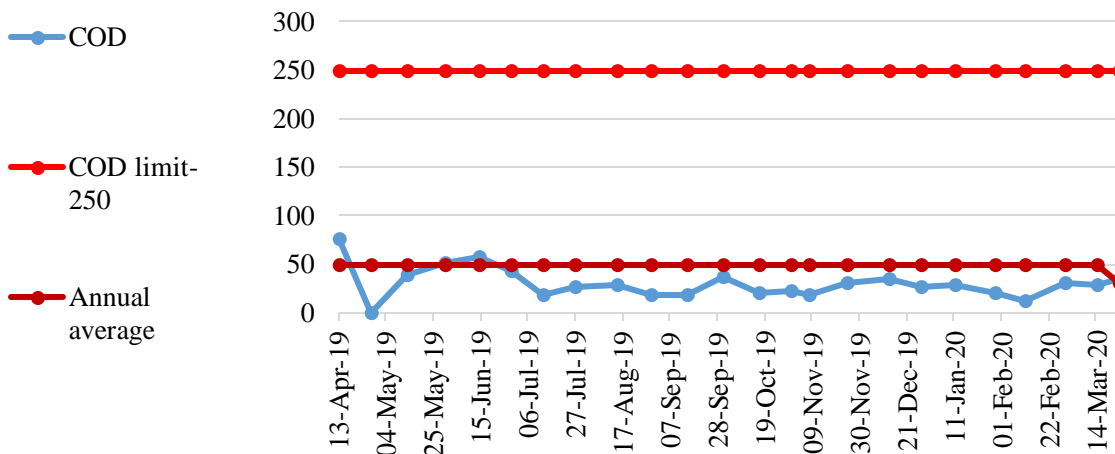
Date of Sampling	pH	COD	BOD
13-Apr-19	3.28	34	2.4
27-Apr-19	7.32	28	
13-May-19	4.67	65	3.8
30-May-19	7.11	37	3.2
28-Jun-19	7.21	31	2.1
12-Jul-19	7.83	16	2.2
27-Jul-19	7.19	34	2.1
14-Aug-19	7.27	26	<2.0
29-Aug-19	6.84	28	<2.0
14-Sep-19	7.02	18	2.4
30-Sep-19	7.40	22	1.3
16-Oct-19	7.24	42	2.0
30-Oct-19	8.10	32	2.1
07-Nov-19	7.02	42	2.3
24-Nov-19	7.24	48	2.6
13-Dec-19	5.67	18	1.8
27-Dec-19	7.09	20	1.2
11-Jan-20	6.65	34	2.2
29-Jan-20	6.96	38	2.2
11-Feb-20	7.18	36	2.4
29-Feb-20	7.04	36	<2.0
14-Mar-20	6.12	34	<2.0
24-Mar-20	6.05	30	<2.0

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph showing for pH of DETP/STP Outlet

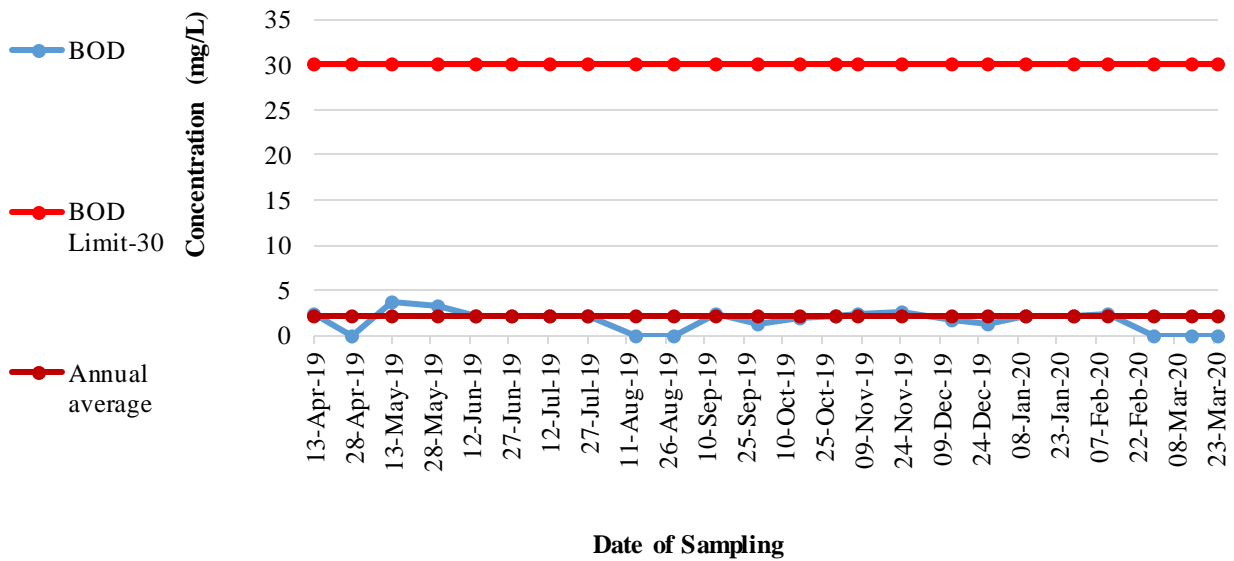


Graph showing for COD of DETP/STP Outlet



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph showing for BOD of DETP/STP Outlet



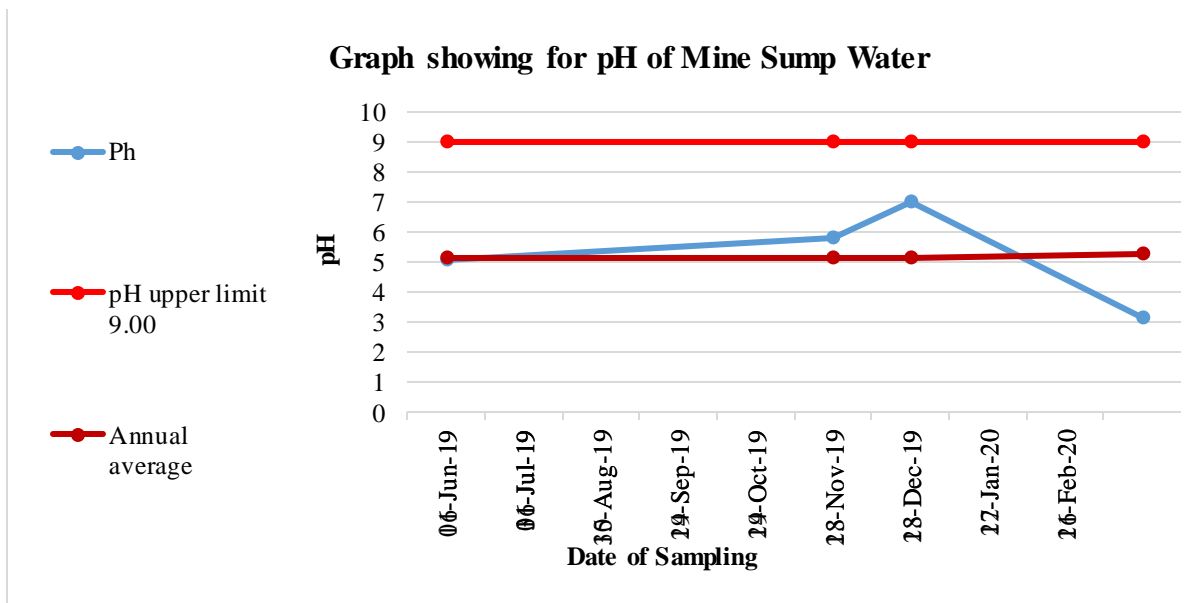
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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:91  
**Area:** Ib valley  
**Project:** Samleswari OCP  
**Monitoring station:** Mine Sump water

Date of Sampling	Ph
14-Mar-20	3.13
13-Dec-19	7.01
07-Nov-19	5.77
14-Jun-19	5.05
13-May-19	7.16
12-Apr-19	6.73



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:92

Area: Ib valley

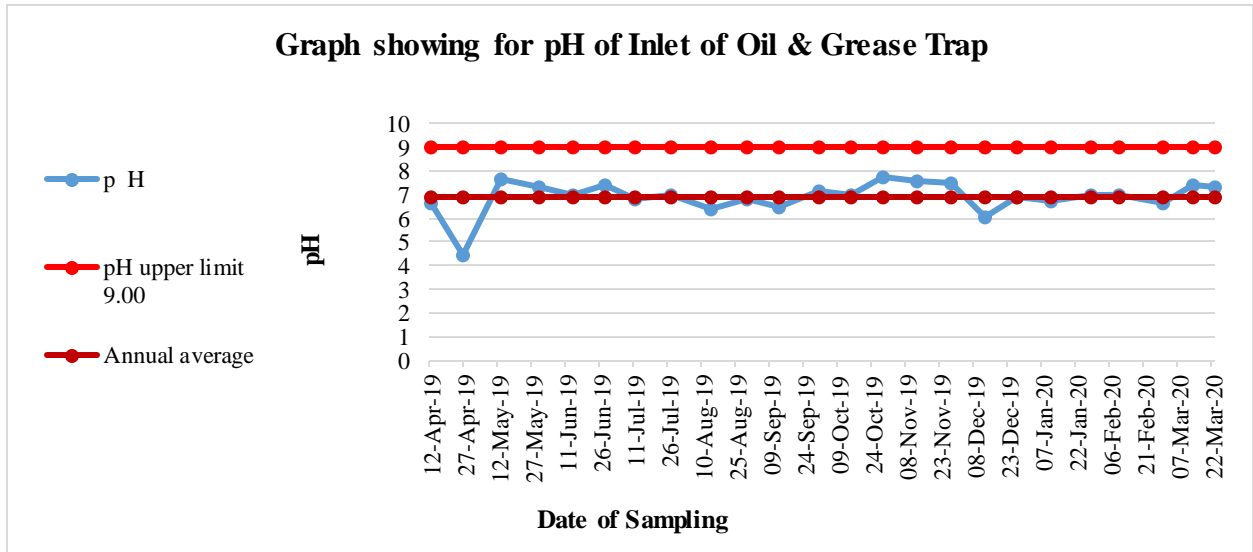
Project: Lajkura OCP

Monitoring station: Inlet of Oil and Grease Trap

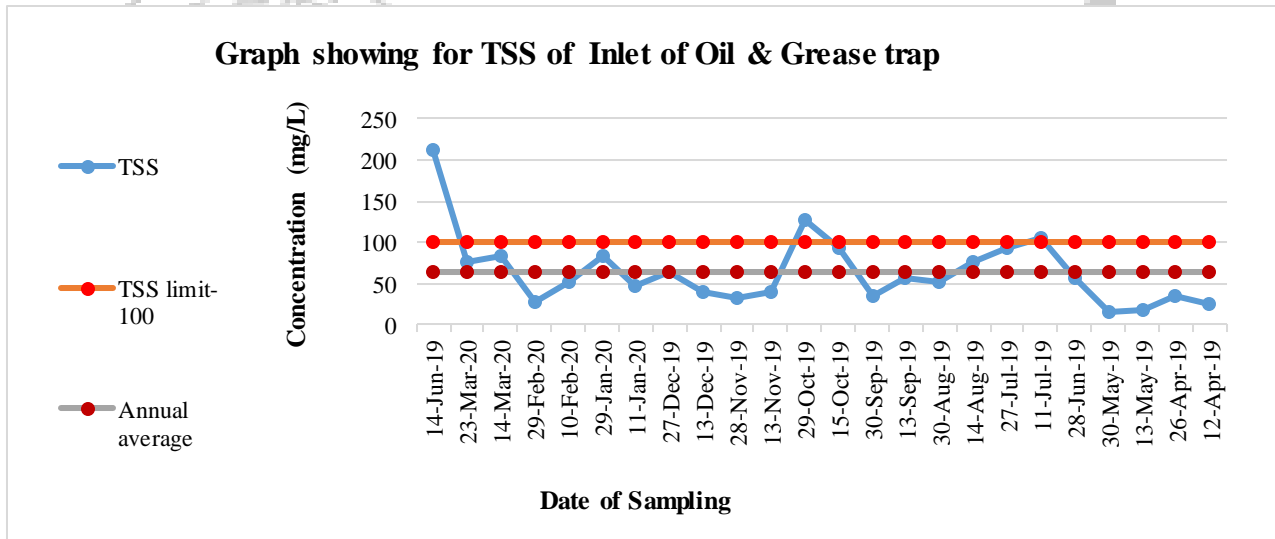
Date of Sampling	Ph	Oil & Grease	COD	TSS
12-Apr-19	6.66	<4.0	89	24
26-Apr-19	4.45	<4.0	69	36
13-May-19	7.70	<4.0	83	18
30-May-19	7.31	<4.0	56	16
14-Jun-19	6.94	<4.0	128	212
28-Jun-19	7.43	<4.0	91	56
11-Jul-19	6.82	<4.0	36	104
27-Jul-19	6.94	4.2	48	92
14-Aug-19	6.42	4.8	92	76
30-Aug-19	6.81	<4.0	108	52
13-Sep-19	6.50	<4.0	86	56
30-Sep-19	7.16	<4.0	34	36
15-Oct-19	6.97	4.4	56	92
29-Oct-19	7.75	4.8	72	128
13-Nov-19	7.60	<4.0	52	40
28-Nov-19	7.46	<4.0	46	32
13-Dec-19	6.09	<4.0	42	40
27-Dec-19	6.91	<4.0	46	64
11-Jan-20	6.71	<4.0	32	48
29-Jan-20	6.98	<4.0	48	84
10-Feb-20	7.01	<4.0	54	52
29-Feb-20	6.61	<4.0	32	28
14-Mar-20	7.43	<4.0	40	84
23-Mar-20	7.36	<4.0	36	76

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph showing for pH of Inlet of Oil & Grease Trap

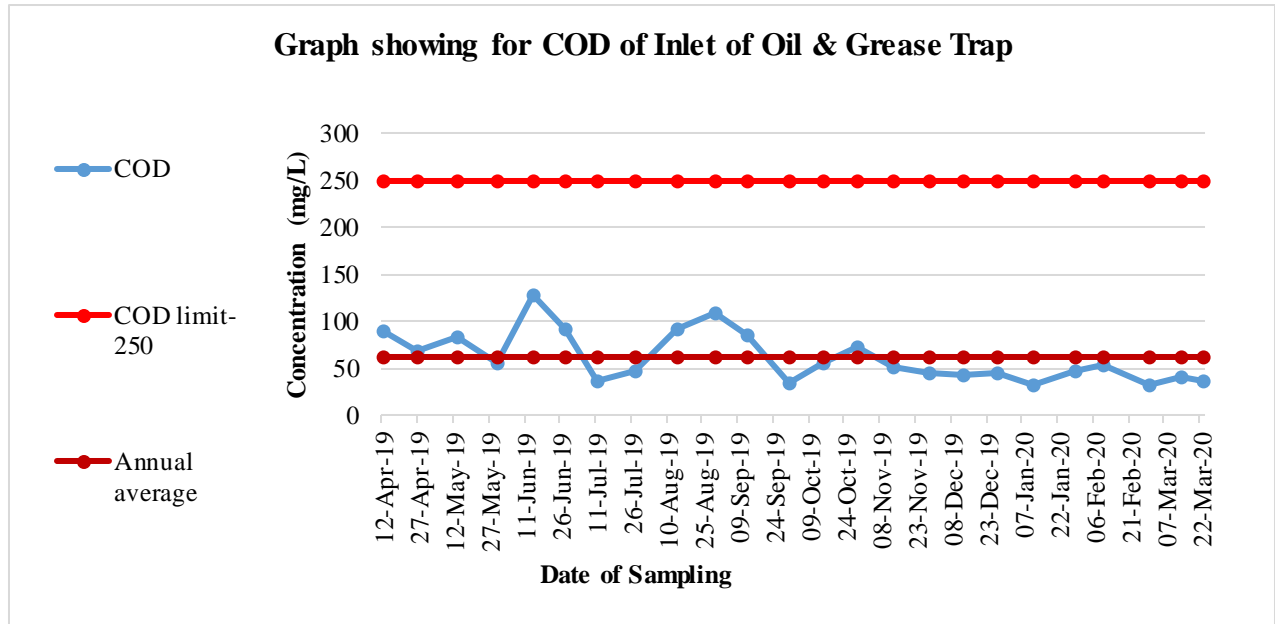


Graph showing for TSS of Inlet of Oil & Grease trap



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph showing for COD of Inlet of Oil & Grease Trap



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:93  
**Area:** Ib valley  
**Project:** Lajkura OCP  
**Monitoring station:** Outlet of Oil and Grease Trap

Date of Sampling	Ph	Oil & Grease	COD	TSS
12-Apr-19	7.07	<4.0	52	16
26-Apr-19	6.93	<4.0	47	24
13-May-19	7.88	<4.0	59	12.8
28-May-19	7.18	<4.0	53	12.8
14-Jun-19	7.75	<4.0	77	72
28-Jun-19	7.48	<4.0	47	24
11-Jul-19	6.76	<4.0	20	88
27-Jul-19	7.78	<4.0	36	56
14-Aug-19	6.86	<4.0	88	20
30-Aug-19	7.05	<4.0	66	36
13-Sep-19	6.27	<4.0	64	20
30-Sep-19	6.82	<4.0	20	16
15-Oct-19	6.88	<4.0	22	40
29-Oct-19	7.25	<4.0	54	72
13-Nov-19	7.59	<4.0	34	32
28-Nov-19	7.38	<4.0	18	12
13-Dec-19	6.74	<4.0	16	12
27-Dec-19	6.91	<4.0	22	28
11-Jan-20	6.78	<4.0	18	36
29-Jan-20	6.84	<4.0	22	40
10-Feb-20	7.38	<4.0	28	24
29-Feb-20	6.37	<4.0	28	12
14-Mar-20	7.69	<4.0	22	36
23-Mar-20	7.58	<4.0	26	44

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:94

Area: Ib valley

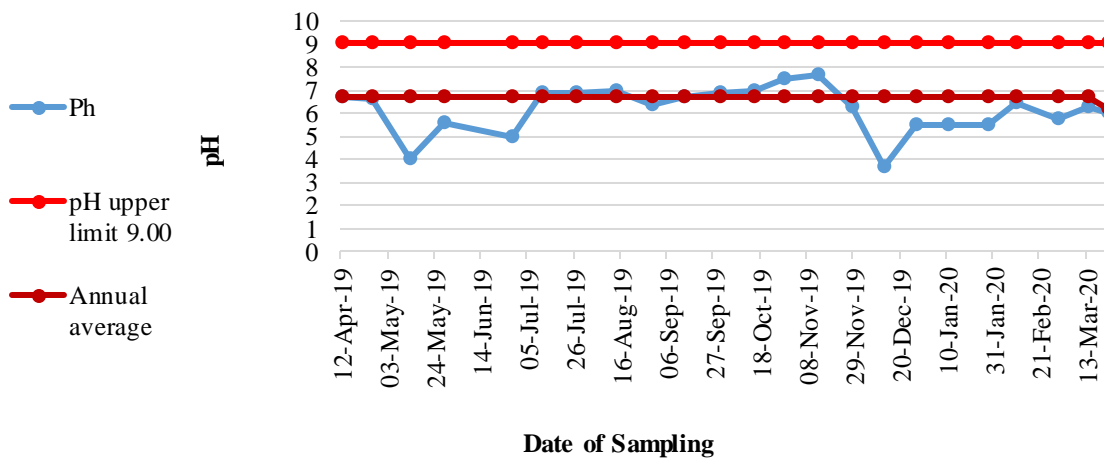
Project: Lajkura OCP

Monitoring station: u/s of Baghmara Nala at Discharge Point

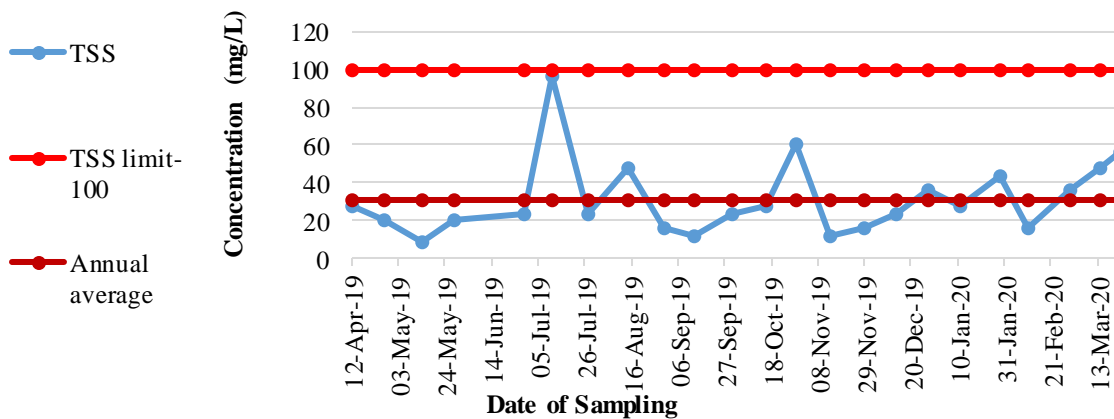
Date of Sampling	pH	Oil & Grease	COD	TSS
12-Apr-19	6.66	<4.0	73	28
26-Apr-19	6.64	<4.0	45	20
13-May-19	4.05	<4.0	61	8.8
28-May-19	5.58	<4.0	78	20
28-Jun-19	5.00	<4.0	61	24
11-Jul-19	6.89	<4.0	28	96
27-Jul-19	6.84	<4.0	16	24
14-Aug-19	6.92	<4.0	52	48
30-Aug-19	6.37	<4.0	40	16
13-Sep-19	6.69	<4.0	58	12
30-Sep-19	6.91	<4.0	21	24
15-Oct-19	6.96	<4.0	16	28
29-Oct-19	7.51	<4.0	48	60
13-Nov-19	7.68	<4.0	28	12
28-Nov-19	6.25	<4.0	24	16
13-Dec-19	3.69	<4.0	22	24
27-Dec-19	5.47	<4.0	24	36
11-Jan-20	5.52	<4.0	20	28
29-Jan-20	5.52	<4.0	24	44
10-Feb-20	6.46	<4.0	12	16
29-Feb-20	5.74	<4.0	34	36
14-Mar-20	6.27	<4.0	24	48
23-Mar-20	6.05	<4.0	28	56

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph showing for pH of u/s of Baghmara Nala at discharge point

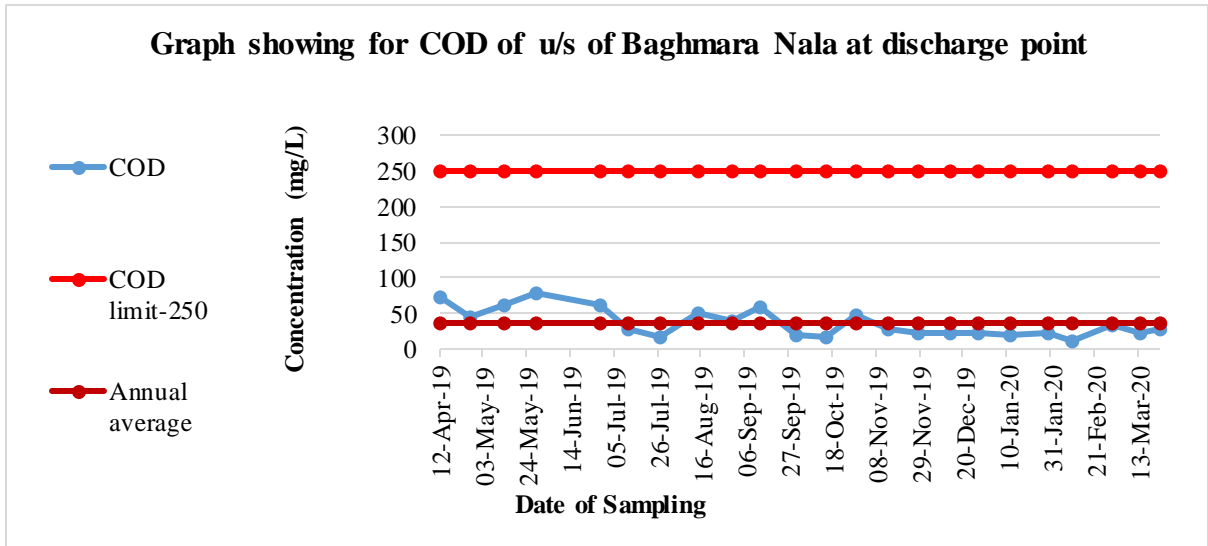


Graph showing for TSS of u/s of Baghmara Nala at discharge point



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph showing for COD of u/s of Baghmara Nala at discharge point



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:95

Area: Ib valley

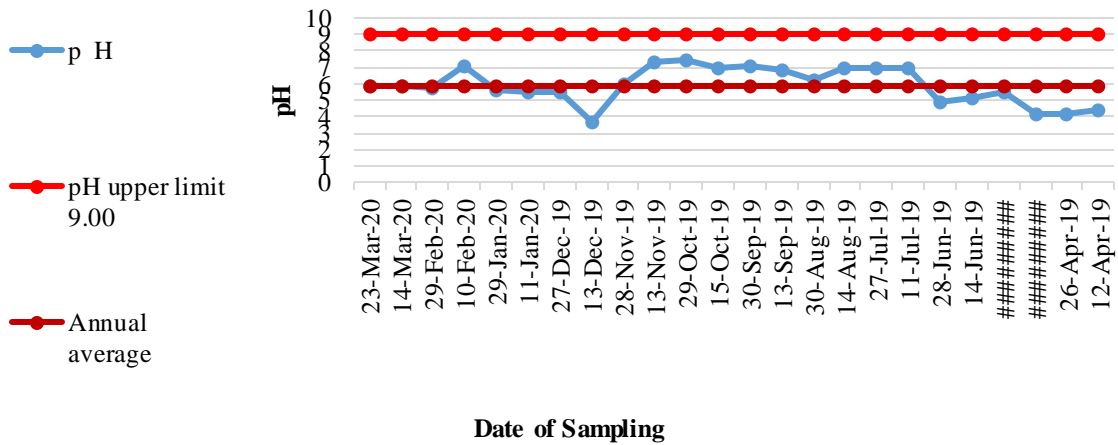
Project: Lajkura OCP

Monitoring station: d/s of Baghmara Nala at Discharge Point

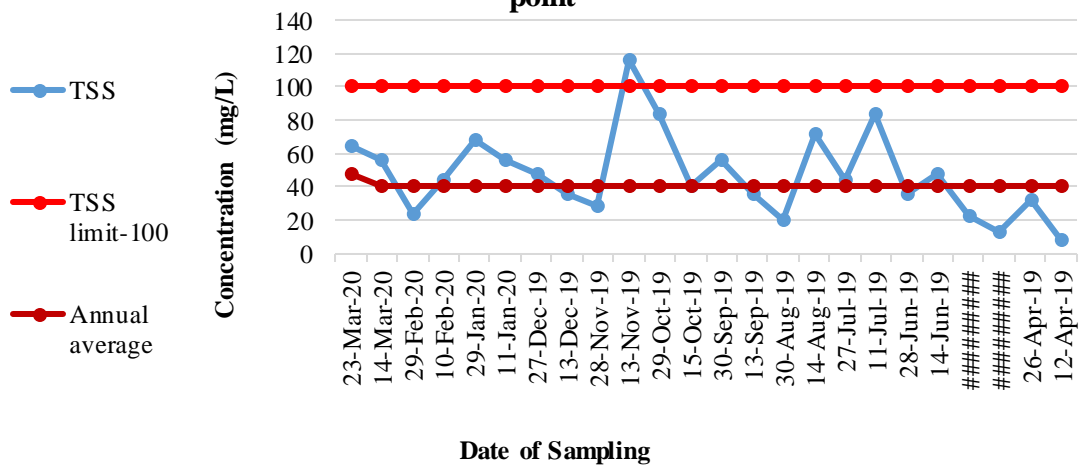
Date of Sampling	Ph	Oil & Grease	COD	TSS
12-Apr-19	4.41	<4.0	29	8
26-Apr-19	4.19	<4.0	77	32
13-May-19	4.16	<4.0	66	12.8
28-May-19	5.52	<4.0	86	22.4
14-Jun-19	5.09	<4.0	161	48
28-Jun-19	4.93	<4.0	77	36
11-Jul-19	6.91	<4.0	30	84
27-Jul-19	6.92	<4.0	37	44
14-Aug-19	7.01	<4.0	58	72
30-Aug-19	6.27	<4.0	56	20
13-Sep-19	6.82	<4.0	70	36
30-Sep-19	7.12	<4.0	45	56
15-Oct-19	6.93	<4.0	38	40
29-Oct-19	7.49	<4.0	76	84
13-Nov-19	7.37	<4.0	36	116
28-Nov-19	6.01	<4.0	22	28
13-Dec-19	3.70	<4.0	32	36
27-Dec-19	5.47	<4.0	36	48
11-Jan-20	5.50	<4.0	32	56
29-Jan-20	5.59	<4.0	18	68
10-Feb-20	7.12	<4.0	32	44
29-Feb-20	5.77	<4.0	24	24
14-Mar-20	5.88	<4.0	28	56
23-Mar-20	5.92	<4.0	20	64

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

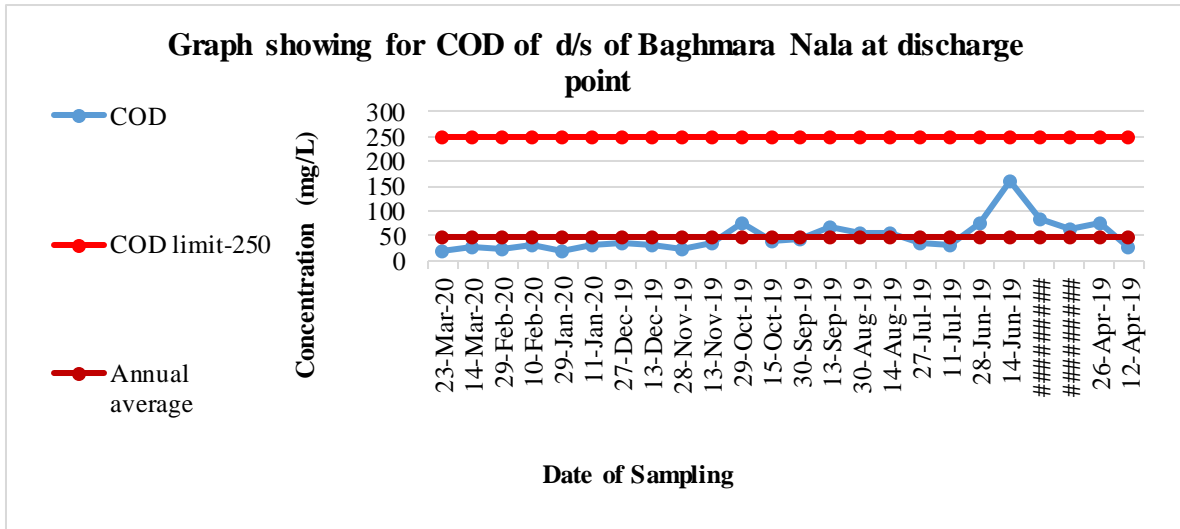
Graph showing for pH of d/s of Baghmara Nala at discharge point



Graph showing for TSS of d/s of Baghmara Nala at discharge point



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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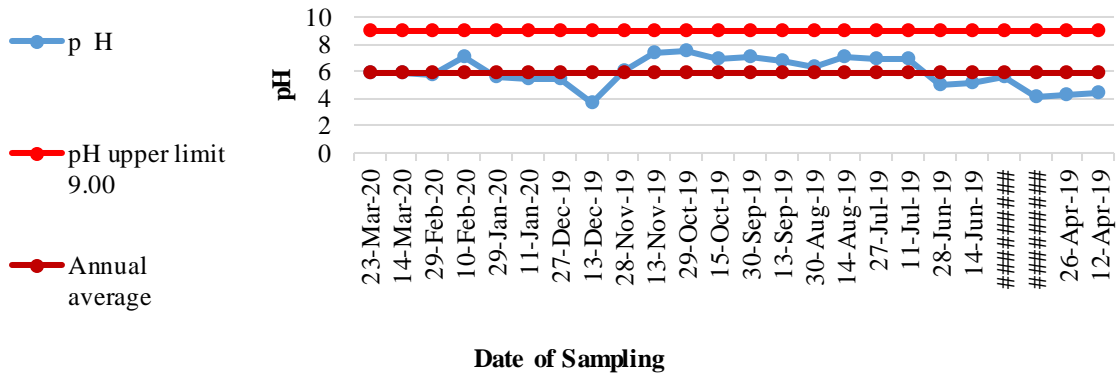
ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:96  
**Area:** Ib valley  
**Project:** Lajkura OCP  
**Monitoring station:** Inlet of MDTP

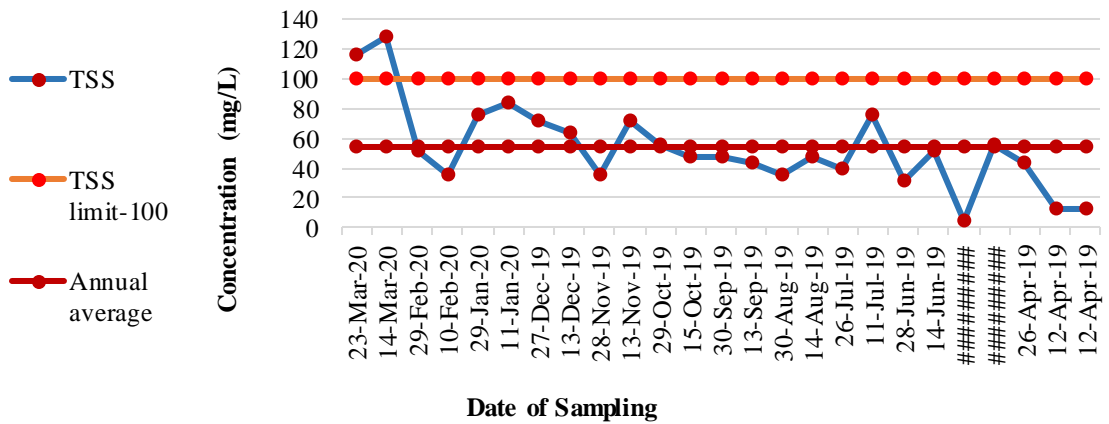
Date of Sampling	Ph	Oil & Grease	COD	TSS
12-Apr-19	4.26	<4.0	38	12
26-Apr-19	4.15	<4.0	58	44
13-May-19	6.35	<4.0	57	56
28-May-19	3.96	<4.0	57	5.2
14-Jun-19	6.80	<4.0	95	52
28-Jun-19	4.32	<4.0	43	32
11-Jul-19	5.06	<4.0	28	76
26-Jul-19	3.97	4.8	32	40
14-Aug-19	6.01	4.2	80	48
30-Aug-19	4.45	<4.0	30	36
13-Sep-19	6.76	<4.0	43	44
30-Sep-19	7.05	<4.0	38	48
15-Oct-19	6.74	<4.0	32	48
29-Oct-19	5.64	<4.0	38	56
13-Nov-19	3.77	<4.0	14	72
28-Nov-19	4.35	<4.0	34	36
13-Dec-19	6.95	<4.0	48	64
27-Dec-19	3.56	<4.0	46	72
11-Jan-20	3.38	4.4	38	84
29-Jan-20	3.09	<4.0	20	76
10-Feb-20	3.61	<4.0	56	36
29-Feb-20	3.30	<4.0	38	52
14-Mar-20	3.74	<4.0	62	128
23-Mar-20	3.64	<4.0	52	116

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

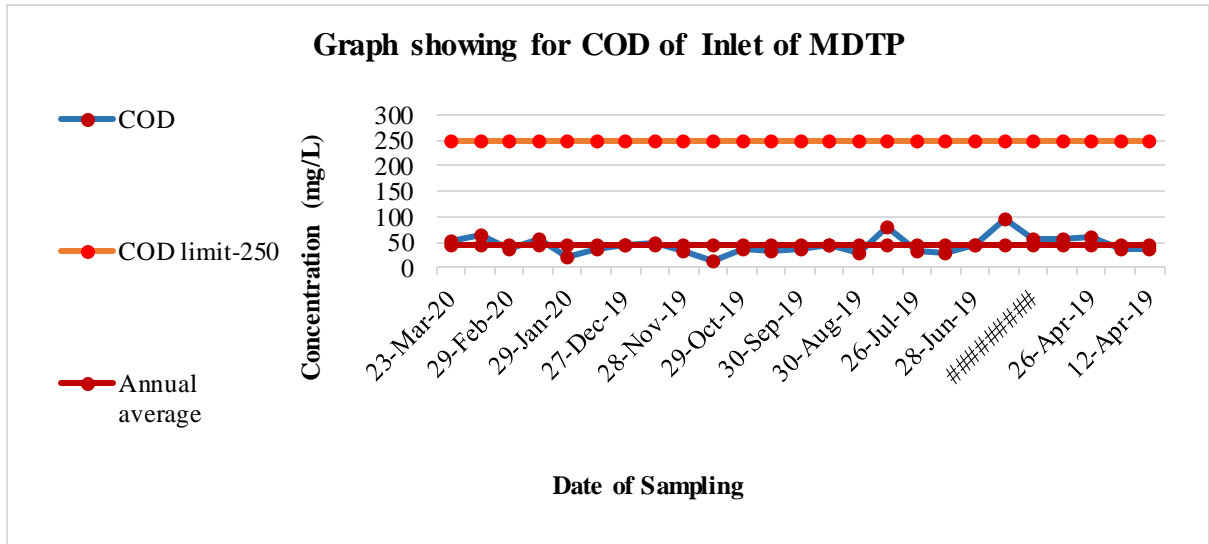
Graph showing for pH of Inlet of MDTP



Graph showing for TSS of Inlet of MDTP



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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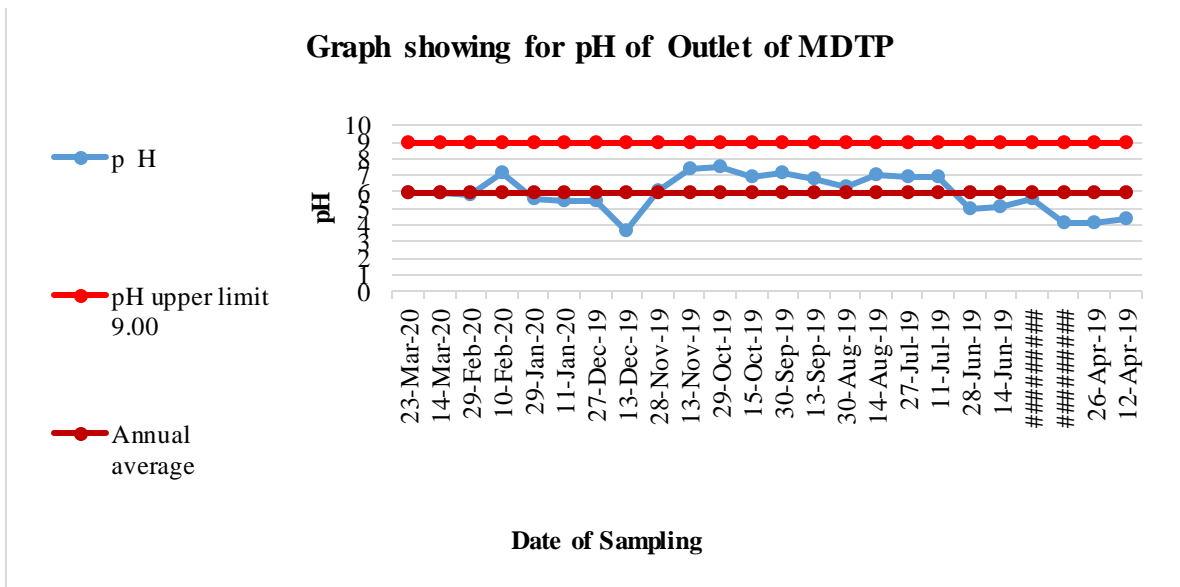
ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:97  
**Area:** Ib valley  
**Project:** Lajkura OCP  
**Monitoring station:** Outlet of MDTP

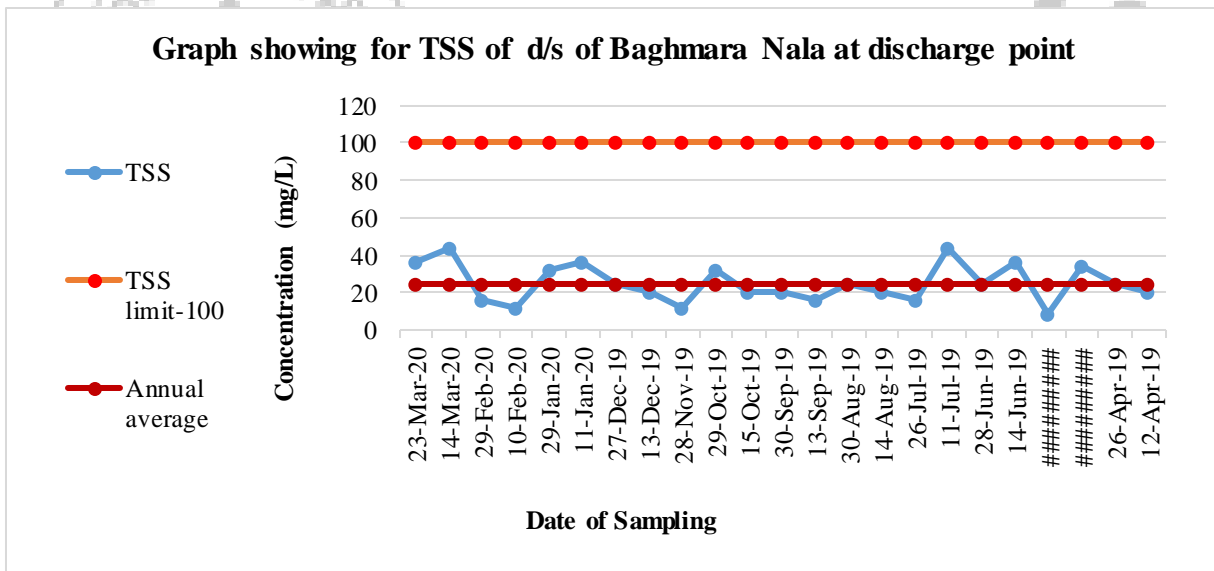
Date of Sampling	Ph	Oil & Grease	COD	TSS
23-Mar-20	4.25	<4.0	24	36
14-Mar-20	4.12	<4.0	28	44
29-Feb-20	3.32	<4.0	20	16
10-Feb-20	3.85	<4.0	16	12
29-Jan-20	5.51	<4.0	16	32
11-Jan-20	3.35	<4.0	24	36
27-Dec-19	3.58	<4.0	24	24
13-Dec-19	3.77	<4.0	20	20
28-Nov-19	3.71	<4.0	18	12
29-Oct-19	5.92	<4.0	22	32
15-Oct-19	6.92	<4.0	12	20
30-Sep-19	6.42	<4.0	18	20
13-Sep-19	6.48	<4.0	20	16
30-Aug-19	5.91	<4.0	26	24
14-Aug-19	6.36	<4.0	73	20
26-Jul-19	4.52	<4.0	18	16
11-Jul-19	5.13	<4.0	22	44
28-Jun-19	4.74	<4.0	34	24.0
14-Jun-19	4.21	<4.0	71	36
28-May-19	4.05	<4.0	51	8.0
13-May-19	4.03	<4.0	69	34
26-Apr-19	5.91	<4.0	49	24
12-Apr-19	7.05	<4.0	55	20

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph showing for pH of Outlet of MDTP



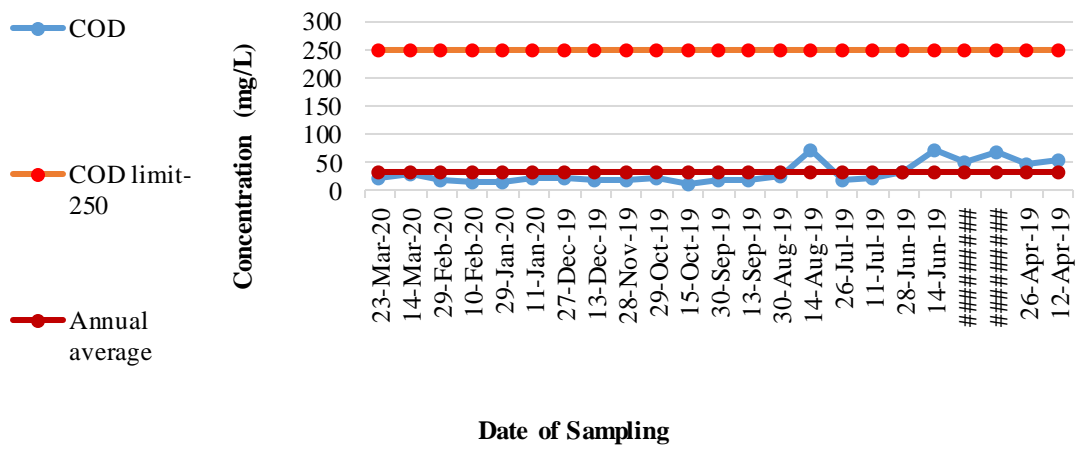
Graph showing for TSS of d/s of Baghmara Nala at discharge point





ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph showing for COD of Outlet of MDTP



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:98

Area: Ib valley

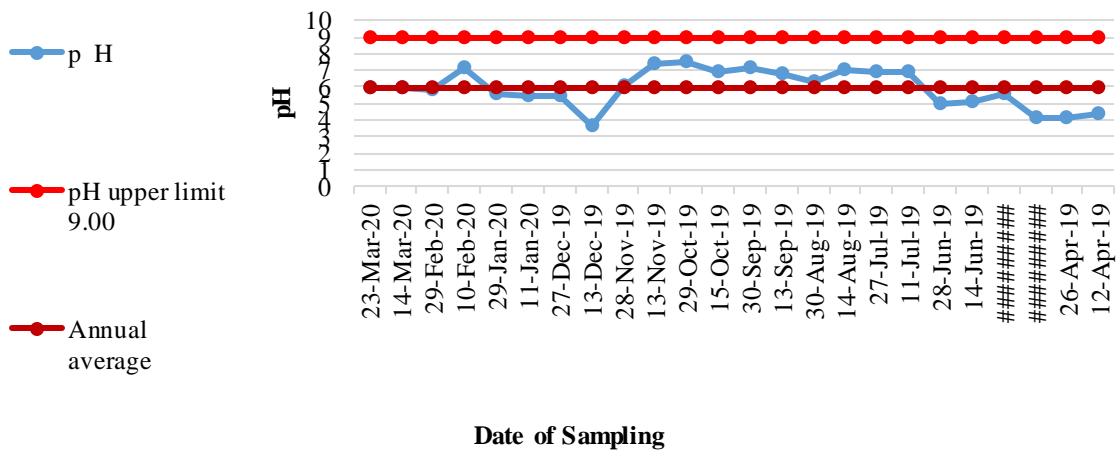
Project : Lajkura OCP

Monitoring station: Treated water from STP

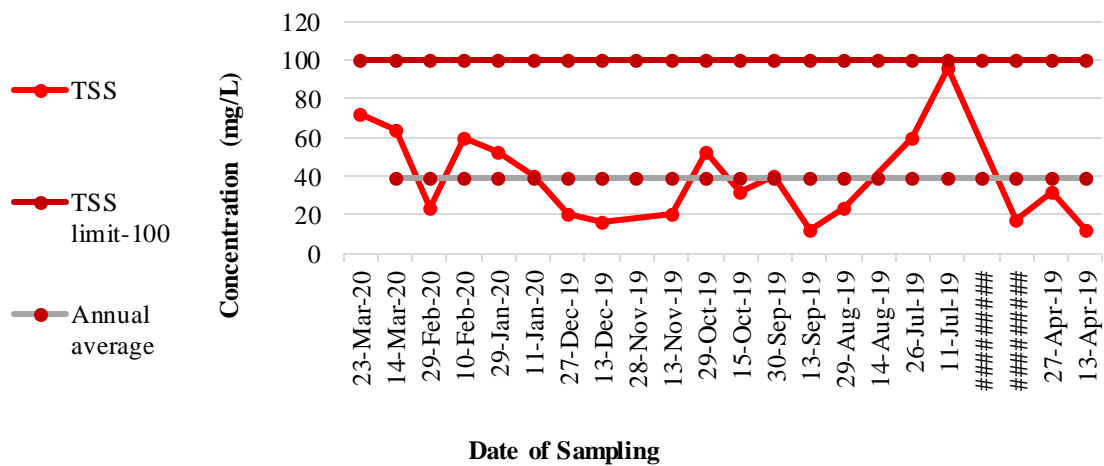
Date of Sampling	Ph	Oil & Grease	COD	TSS	BOD
13-Apr-19	7.16	<4.0	44	12	
27-Apr-19	7.17	<4.0	49	32	
13-May-19	7.76	<4.0	106	16.8	
28-May-19	6.43		38		3.2
11-Jul-19	7.14	<4.0	14	96	
26-Jul-19	8.10	<4.0	44	60	
14-Aug-19	10.56		30		2.2
29-Aug-19	9.45	<4.0	30	24	
13-Sep-19	7.07	<4.0	21	12	
30-Sep-19	6.88	<4.0	30	40	
15-Oct-19	6.82	<4.0	24	32	
29-Oct-19	8.14	<4.0	46	52	
13-Nov-19	7.84	<4.0	16	20	
28-Nov-19	3.69		16		1.6
13-Dec-19	7.02	<4.0	18	16	
27-Dec-19	6.57	<4.0	28	20	
11-Jan-20	6.62	<4.0	24	40	
29-Jan-20	6.91	<4.0	42	52	
10-Feb-20	6.73	<4.0	42	60	
29-Feb-20	6.83	<4.0	46	24	
14-Mar-20	4.30	<4.0	38	64	
23-Mar-20	4.11	<4.0	26	72	

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

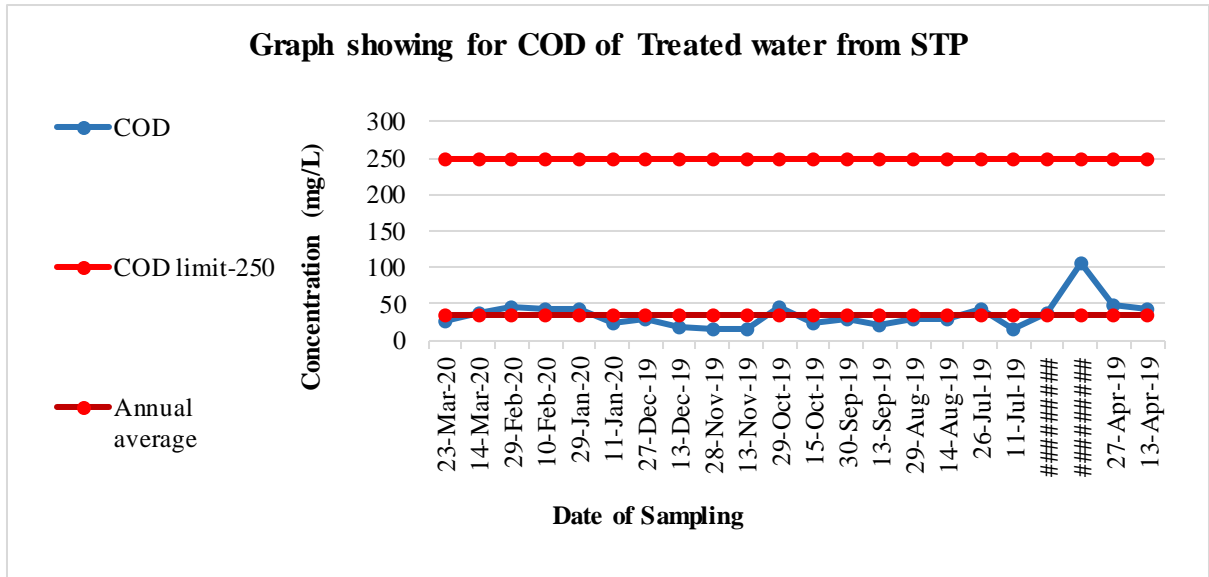
Graph showing for pH of Treated water from STP



Graph showing for TSS of Treated water from STP



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



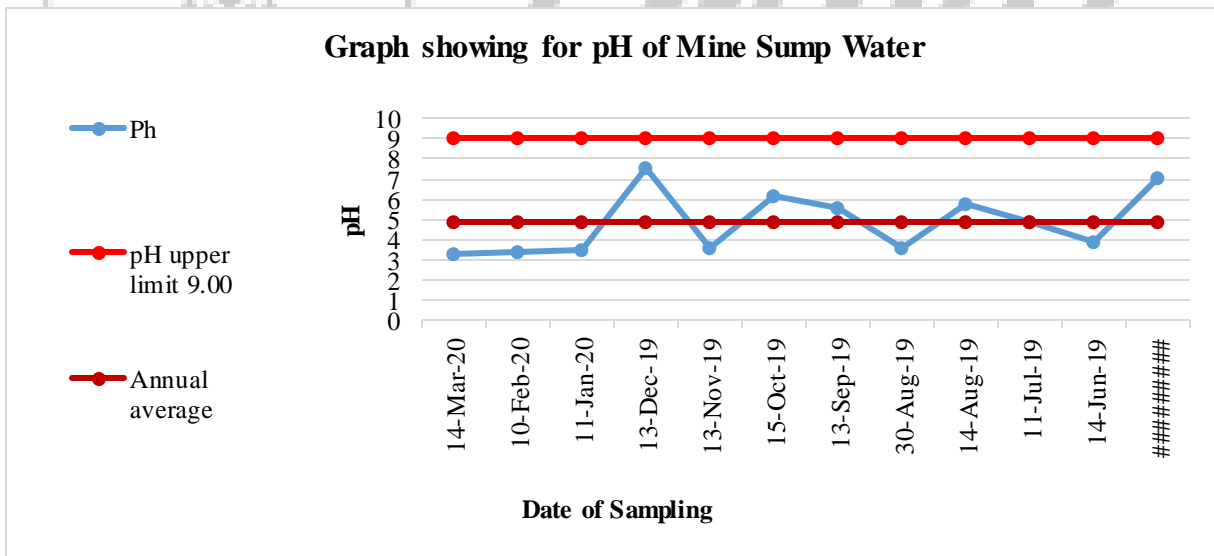
cmpdi

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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:99  
**Area:** Ib valley  
**Project:** Lajkura OCP  
**Monitoring station:** Mine sump water

Date of Sampling	Ph
13-May-19	7.03
14-Jun-19	3.89
11-Jul-19	4.83
14-Aug-19	5.78
30-Aug-19	3.63
13-Sep-19	5.58
15-Oct-19	6.12
13-Nov-19	3.56
13-Dec-19	7.58
11-Jan-20	3.51
10-Feb-20	3.35
14-Mar-20	3.25



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

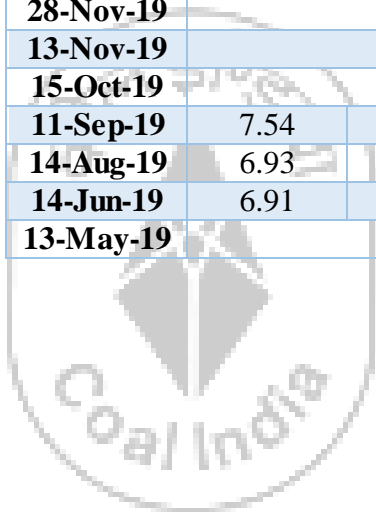
Table:100

Area: Ib valley

Project : Central Hospital

Monitoring station: Outlet of Drain

Date of Sampling	Ph	Oil & Grease	TSS	COD	BOD	
24-Mar-20						DRY
14-Mar-20						DRY
29-Feb-20						DRY
10-Feb-20						DRY
29-Jan-20						DRY
27-Dec-19						DRY
13-Dec-19						DRY
28-Nov-19						DRY
13-Nov-19						DRY
15-Oct-19						DRY
11-Sep-19	7.54	<4.0	25	24	2.6	-
14-Aug-19	6.93	4.4	68	68	2.9	-
14-Jun-19	6.91	5.6	239	472	3.9	-
13-May-19						DRY



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

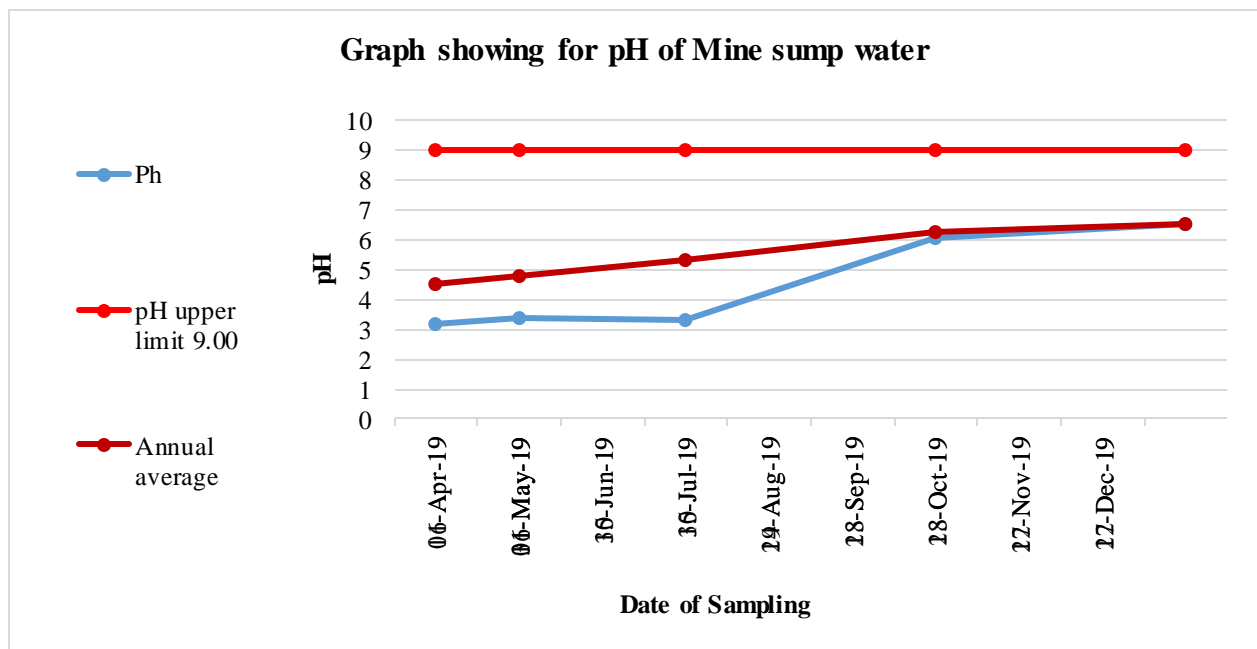
Table:101

Area: Lakhanpur

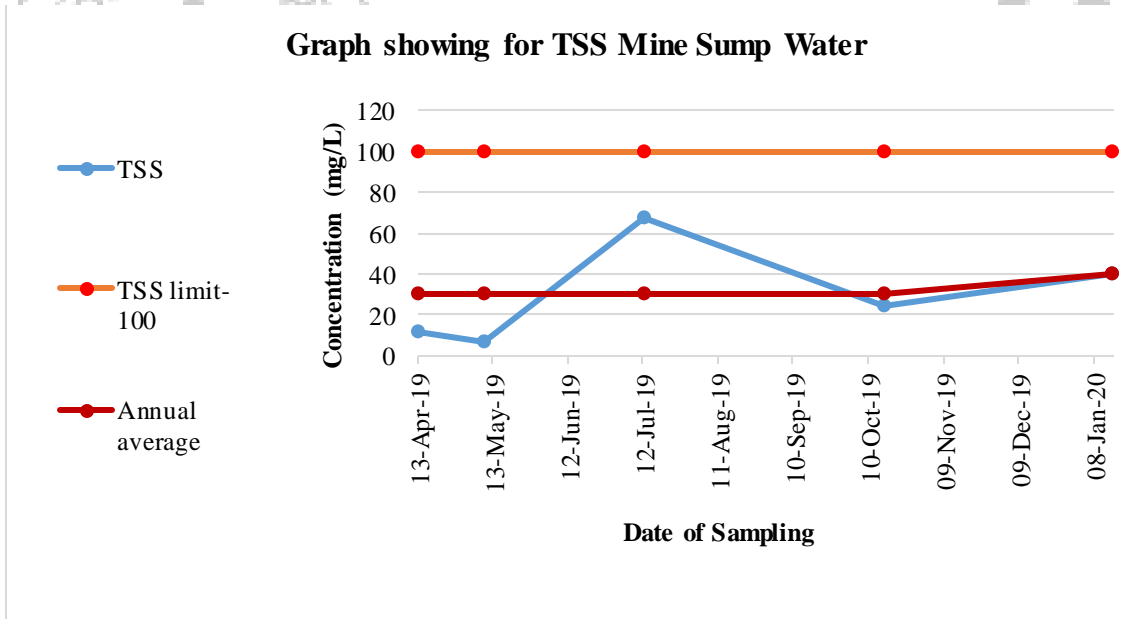
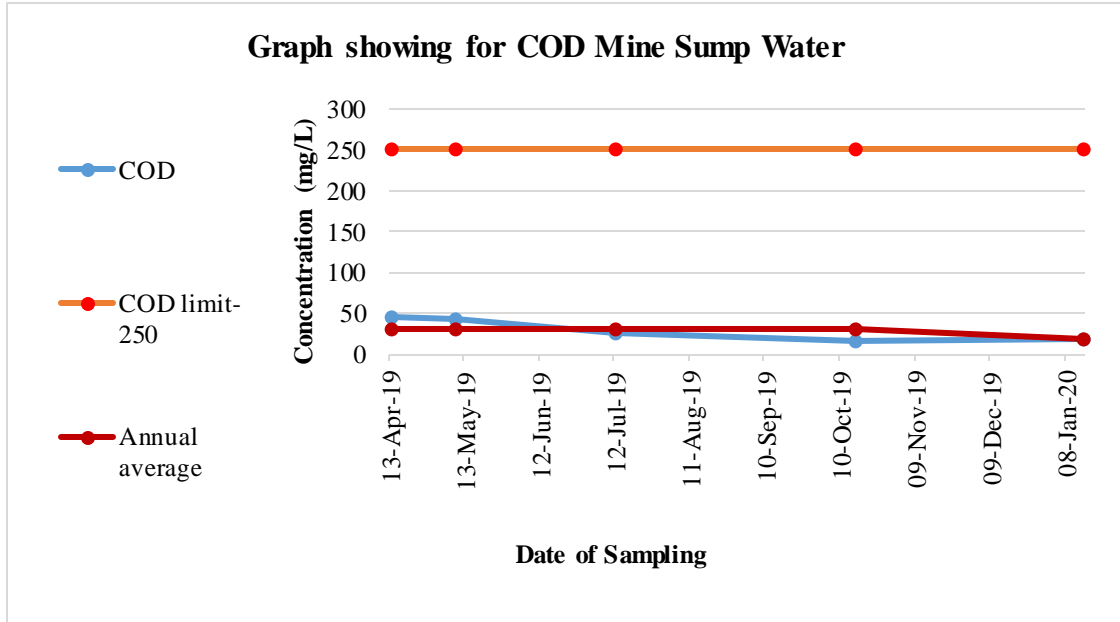
Project: Lilari OCP

Monitoring station: Mine sump water

Date of Sampling	Ph	Oil & Grease	COD	TSS
13-Apr-19	3.19	<4.0	45	12
09-May-19	3.38	<4.0	43	6.4
12-Jul-19	3.30	<4.0	26	68
16-Oct-19	6.05	<4.0	16	24
15-Jan-20	6.51	<4.0	18	40



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)





ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

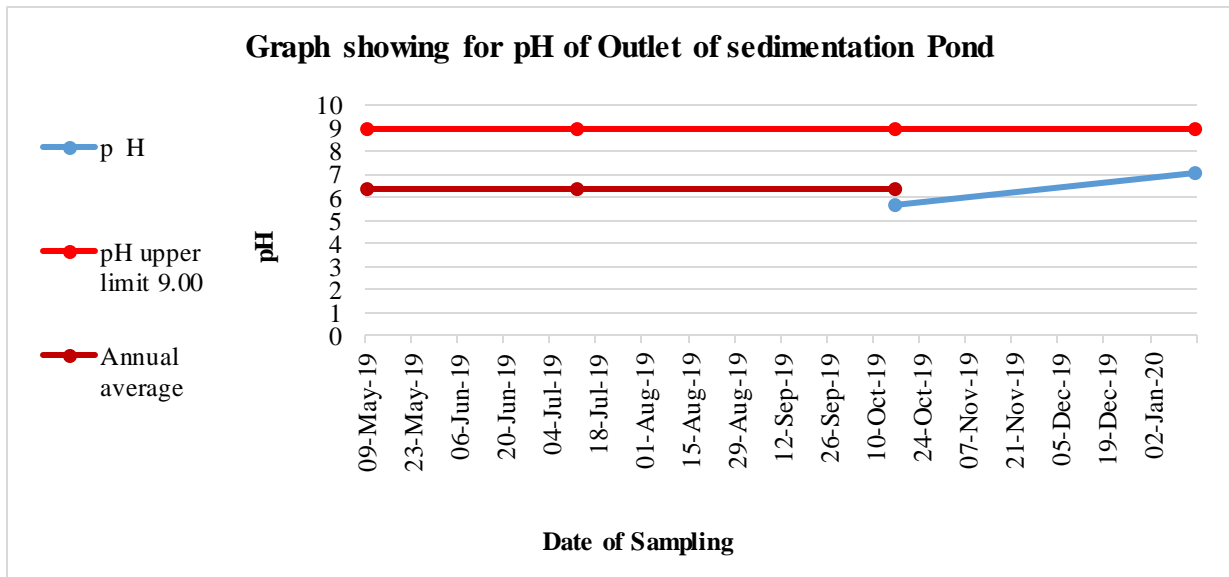
Table:102

Area: Lakhanpur

Project : Lakhanpur OCP

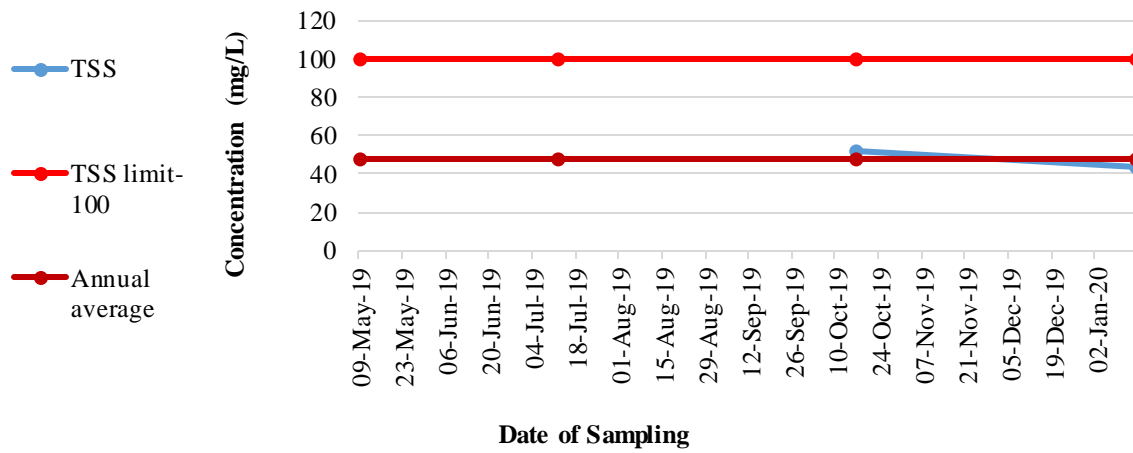
Monitoring station: Outlet of Sedimentation Pond

Date of Sampling	Ph	Oil & Grease	COD	TSS
09-May-19	Dry	Dry	Dry	Dry
12-Jul-19	Dry	Dry	Dry	Dry
16-Oct-19	5.70	<4.0	28	52
15-Jan-20	7.03	<4.0	24	44

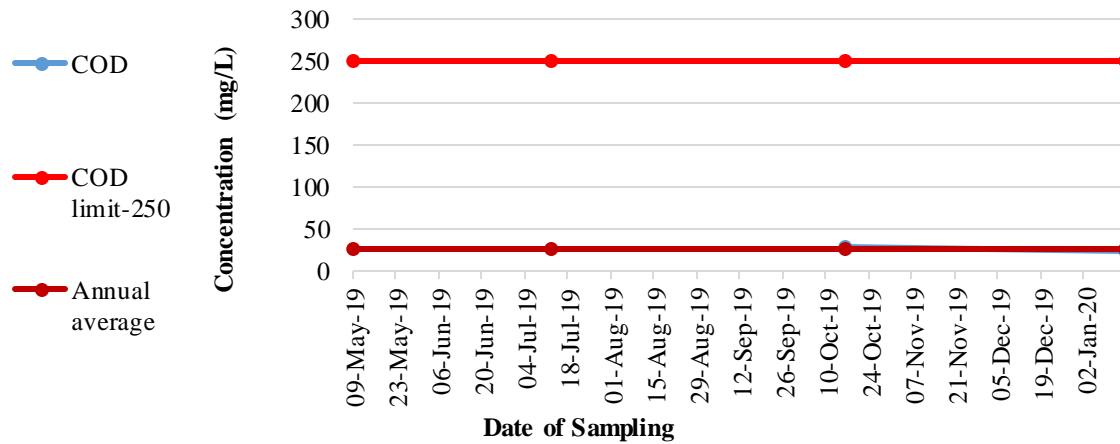


ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Graph showing for TSS of Outlet of sedimentation Pond



Graph showing for COD Outlet of sedimentation Pond



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

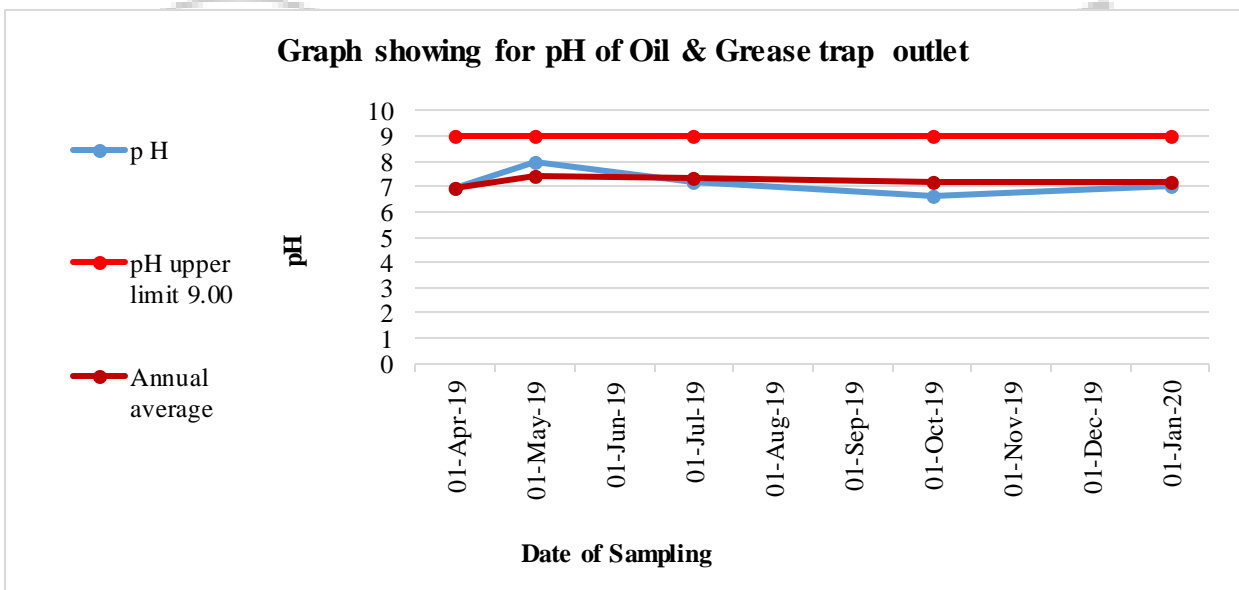
Table:103

Area: Lakhanpur

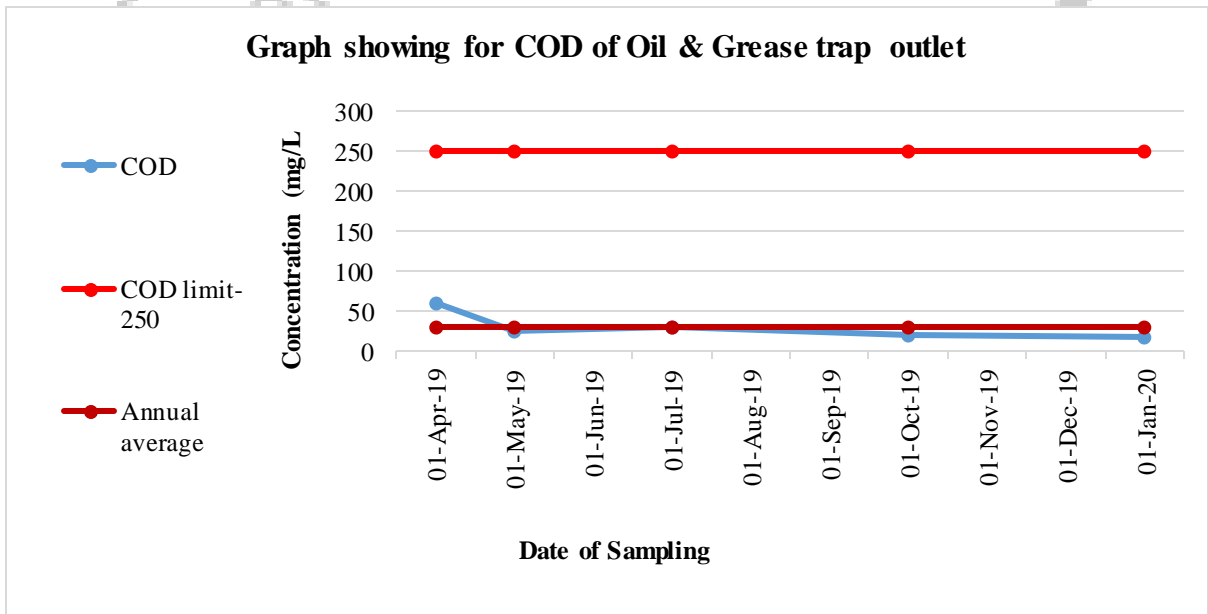
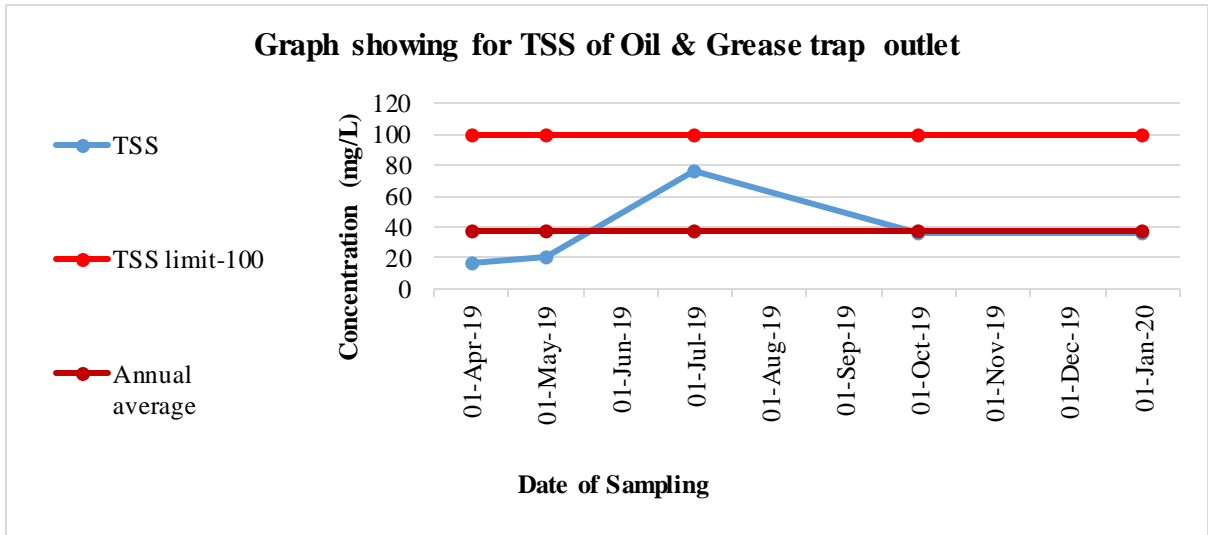
Project: Lakhanpur OCP

Monitoring station: O&G Trap Outlet

Date of Sampling	Ph	Oil & Grease	COD	TSS
15-Jan-20	7.05	<4.0	18	36
16-Oct-19	6.62	<4.0	22	36
12-Jul-19	7.15	<4.0	32	76
09-May-19	7.97	<4.0	27	20.8
13-Apr-19	6.94	<4.0	61	16



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

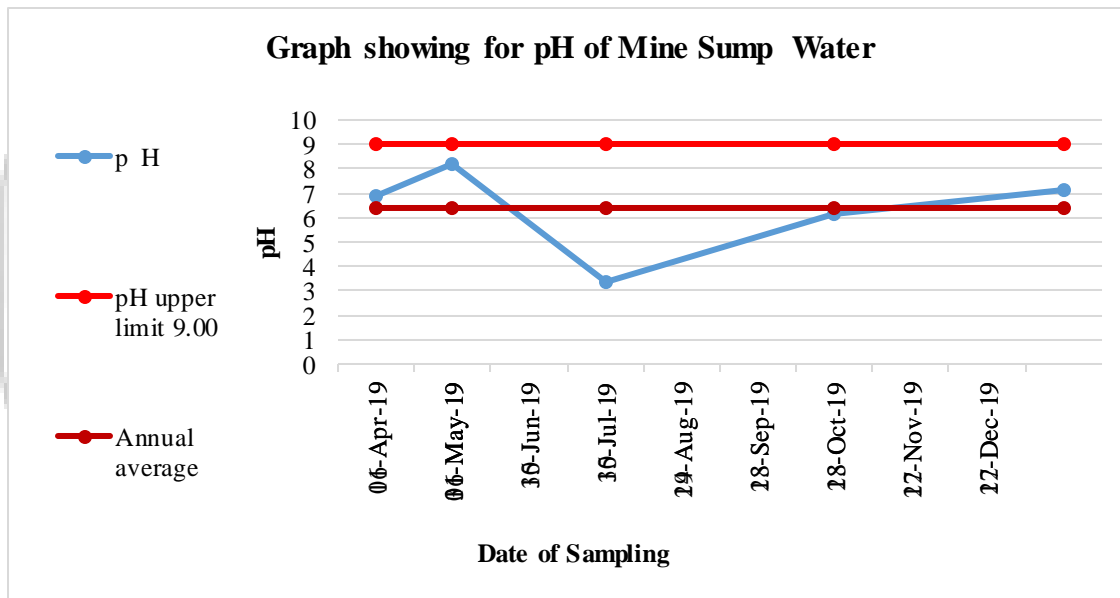
Table:104

Area: Lakhanpur

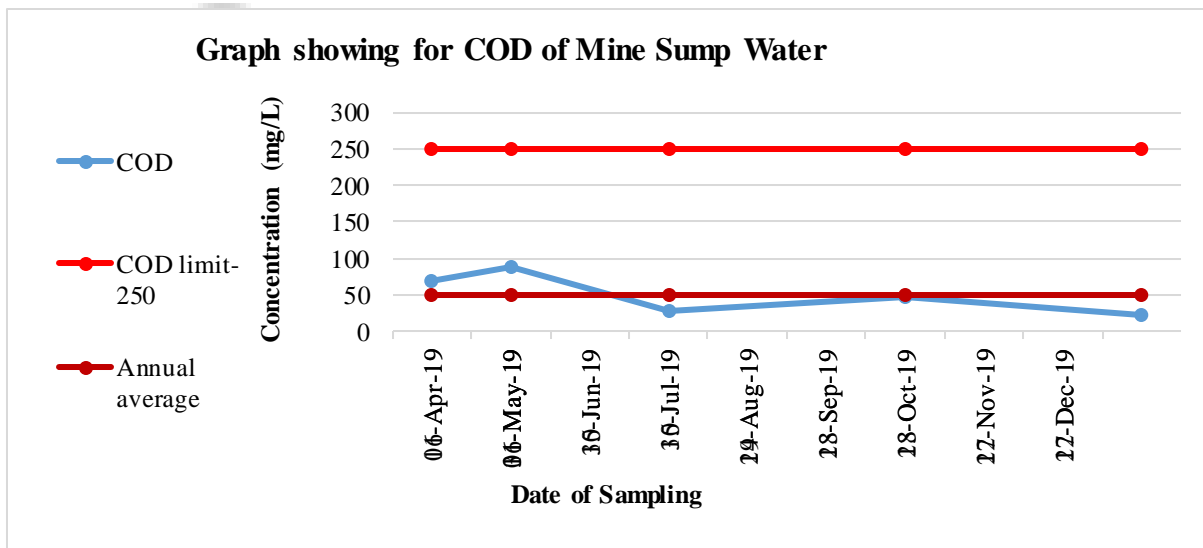
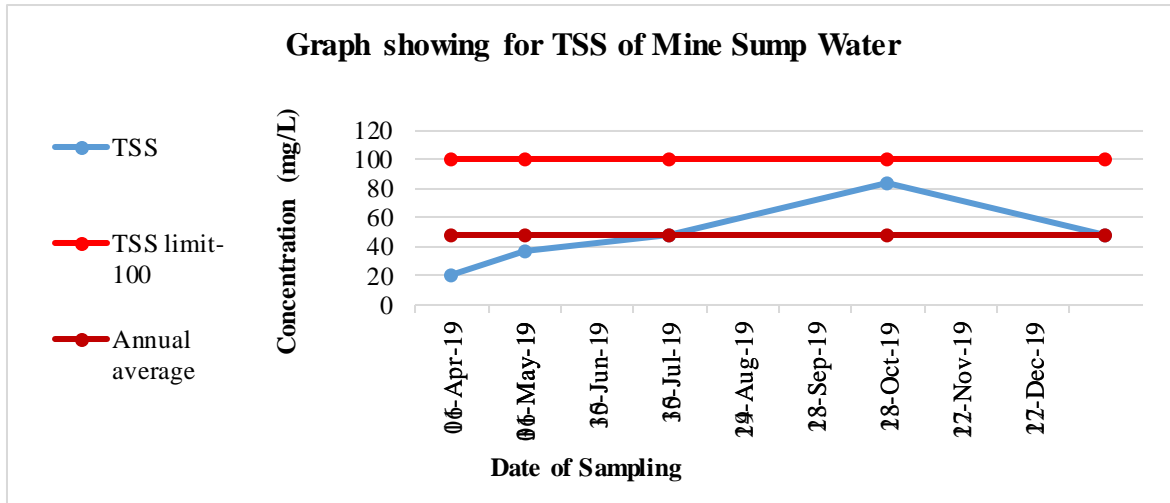
Project : Lakhanpur OCP

Monitoring station: Mine Sump Water

Date of Sampling	p H	Oil & Grease	COD	TSS
15-Jan-20	7.16	<4.0	22	48
16-Oct-19	6.18	<4.0	46	84
13-Jul-19	3.38	<4.0	28	48
09-May-19	8.23	<4.0	87	36.4
13-Apr-19	6.85	<4.0	69	20



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

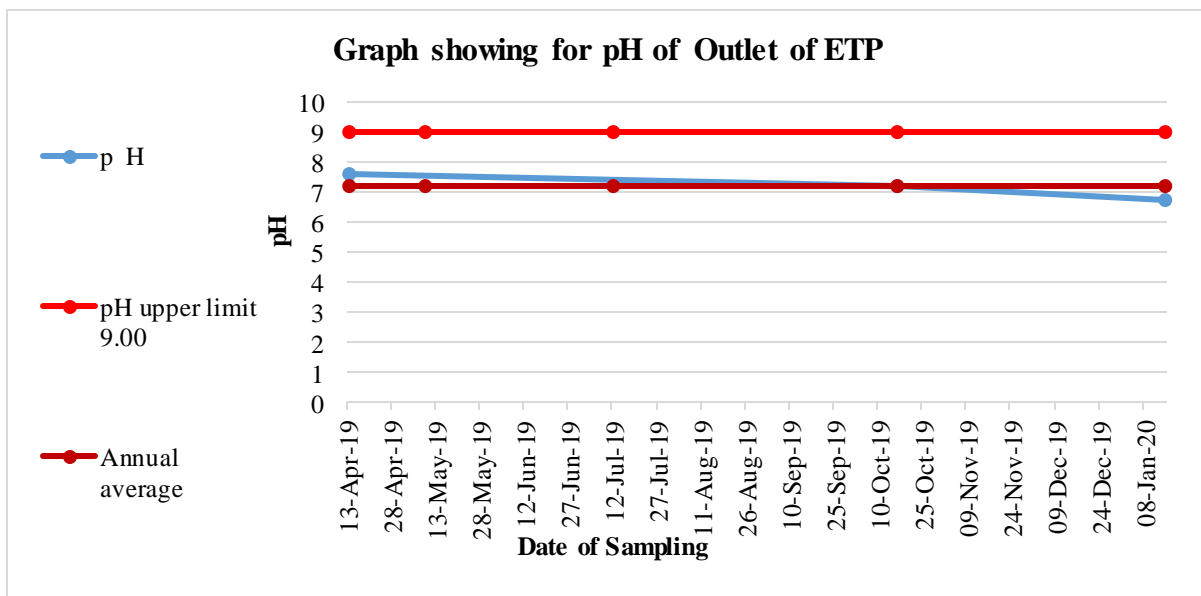
Table:105

Area: Lakhanpur

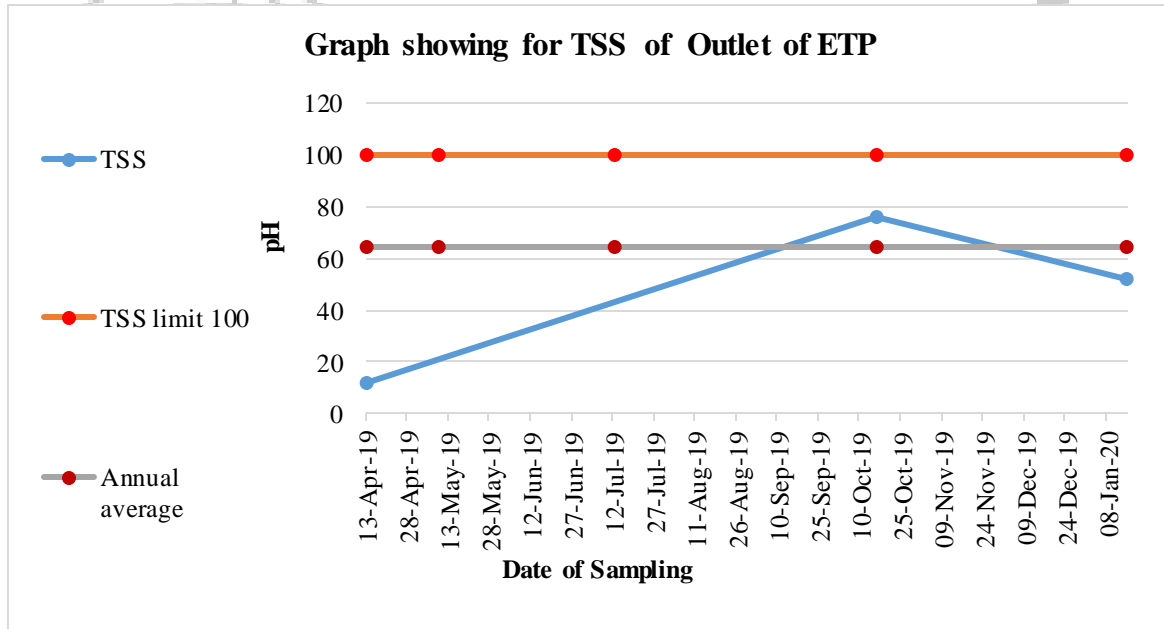
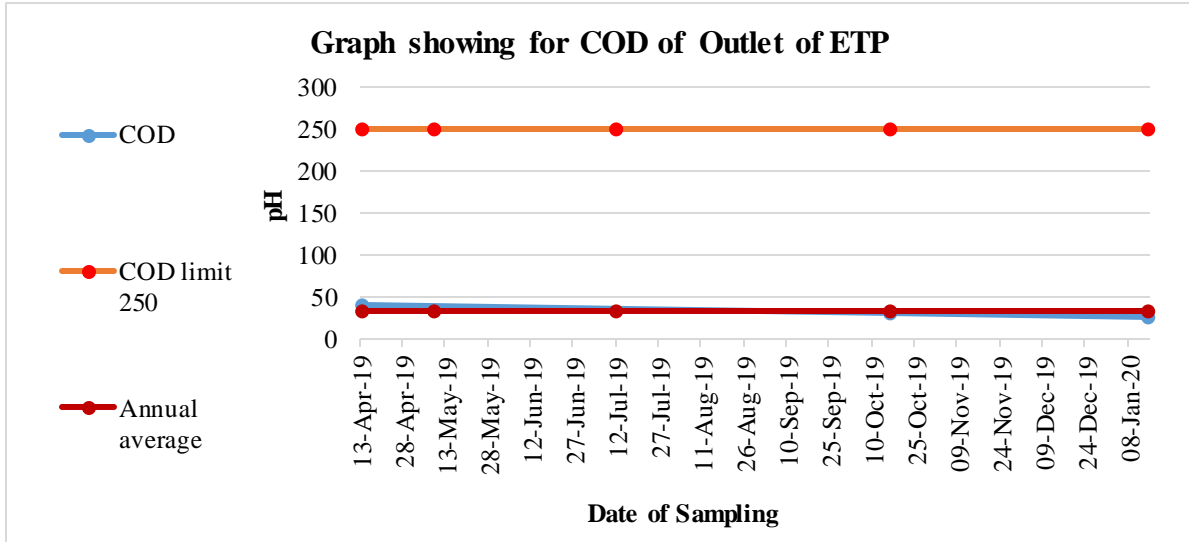
Project : Belpahar OCP

Monitoring station: Outlet of ETP

Date of Sampling	p H	Oil & Grease	COD	TSS
13-Apr-19	7.61	<4.0	41	12
09-May-19	DRY	DRY	DRY	DRY
12-Jul-19	DRY	DRY	DRY	DRY
16-Oct-19	7.21	<4.0	30	76
15-Jan-20	6.79	<4.0	26	52



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

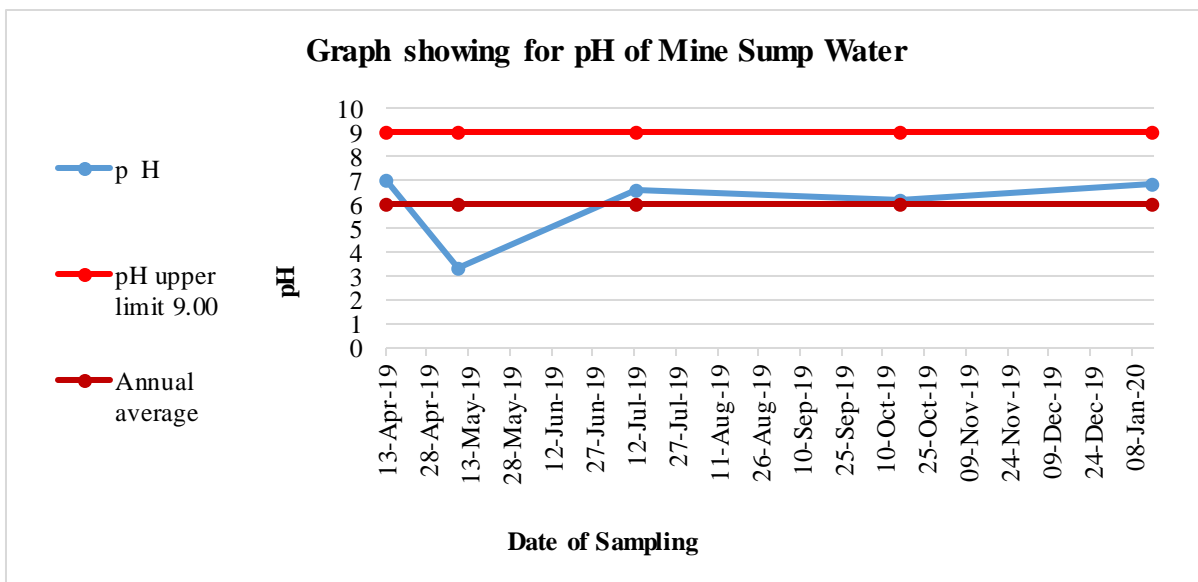




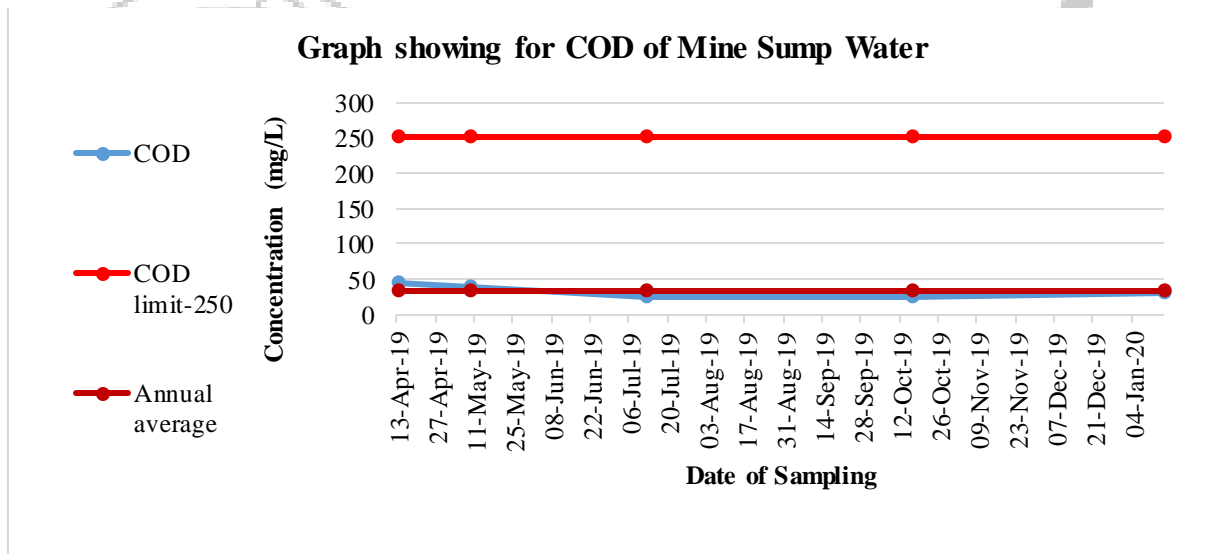
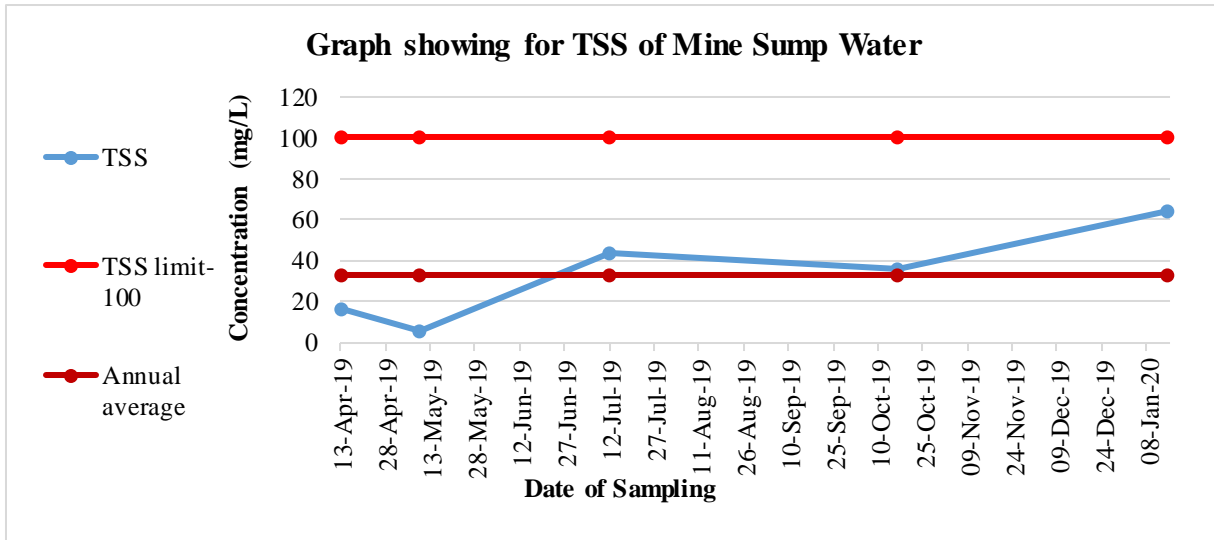
ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:106  
**Area:** Lakhanpur  
**Project:** Belpahar OCP  
**Monitoring station:** Mine sump water

Date of Sampling	Ph	Oil & Grease	COD	TSS
13-Apr-19	7.06	<4.0	45	16
09-May-19	3.32	<4.0	40	5.6
12-Jul-19	6.59	<4.0	26	44
16-Oct-19	6.22	<4.0	24	36
15-Jan-20	6.89	<4.0	32	64



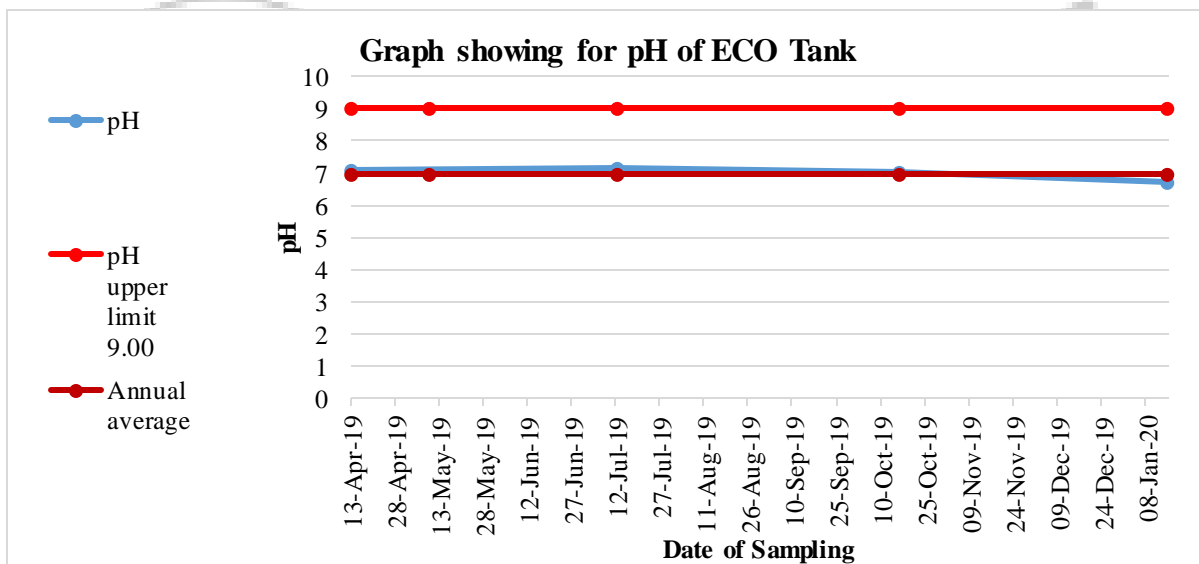
ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



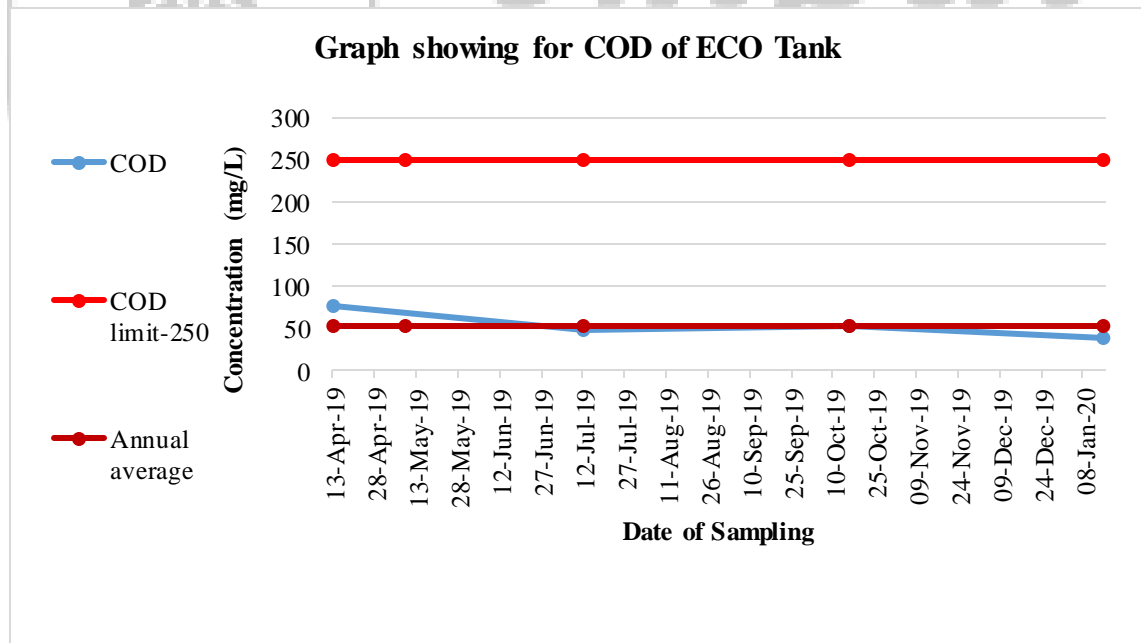
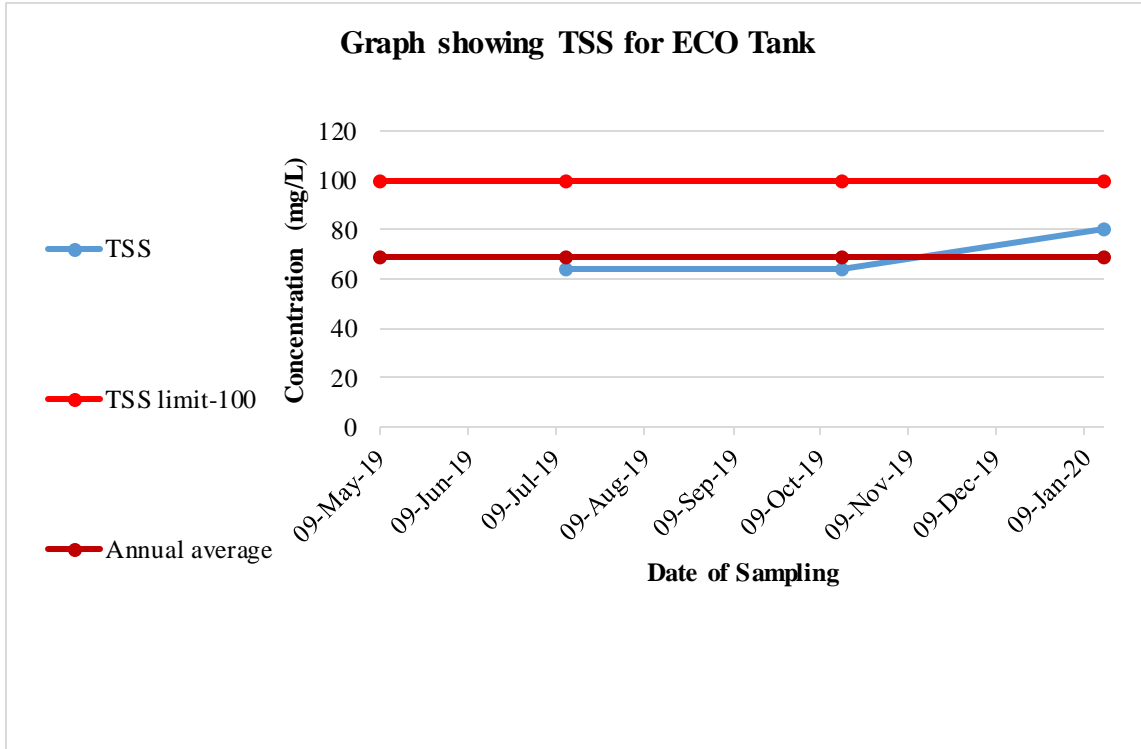
ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:107  
**Area:** Lakhanpur  
**Project:** Belpahar OCP  
**Monitoring station:** ECO Tank

Date of Sampling	pH	Oil & Grease	COD	TSS
13-Apr-19	7.12	<4.0	76	28
09-May-19	DRY	DRY	DRY	DRY
12-Jul-19	7.15	<4.0	48	64
16-Oct-19	7.03	<4.0	52	64
15-Jan-20	6.72	4.6	38	80



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:108

Area: Basundhara Garjanbahal

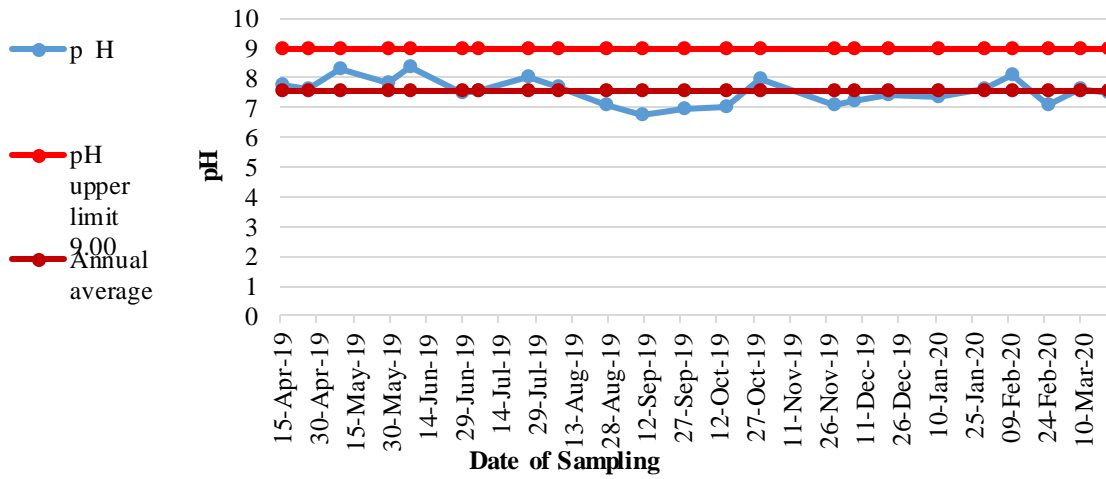
Project: Kulda OCP

Monitoring station: Mine Sump Water

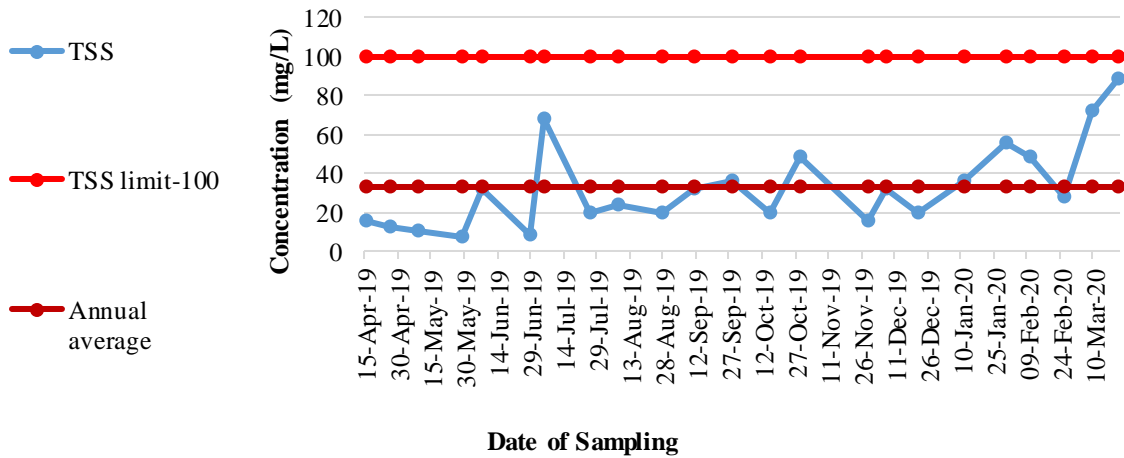
Date of Sampling	pH	Oil & Grease	COD	TSS
15-Apr-19	7.74	<4.0	48	16
26-Apr-19	7.64	<4.0	29	12
09-May-19	8.32	<4.0	45	10
29-May-19	7.85	<4.0	40	7.2
07-Jun-19	8.34	<4.0	55	32
28-Jun-19	7.47	<4.0	30	8
05-Jul-19	7.54	<4.0	32	68
26-Jul-19	8.03	<4.0	16	20
07-Aug-19	7.71	<4.0	24	24
27-Aug-19	7.07	<4.0	32	20
11-Sep-19	6.78	<4.0	22	32
28-Sep-19	6.99	<4.0	26	36
15-Oct-19	7.00	<4.0	32	20
29-Oct-19	7.95	<4.0	26	48
29-Nov-19	7.11	<4.0	32	16
07-Dec-19	7.23	<4.0	18	32
21-Dec-19	7.42	<4.0	32	20
11-Jan-20	7.39	<4.0	12	36
30-Jan-20	7.61	<4.0	22	56
10-Feb-20	8.07	<4.0	26	48
25-Feb-20	7.09	<4.0	22	28
09-Mar-20	7.60	<4.0	30	72
21-Mar-20	7.48	<4.0	34	88

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

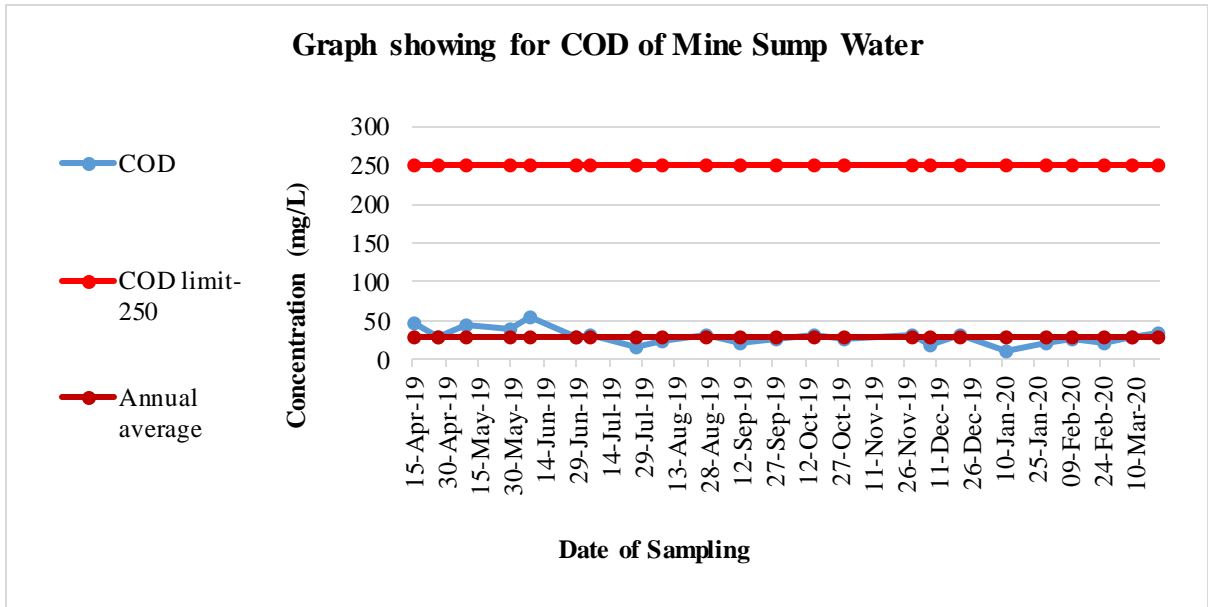
Graph showing for pH of Mine Sump Water



Graph showing for TSS of Mine Sump Water



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:109

**Area:** Basundhara Garjanbahal

**Project :** Kulda OCP

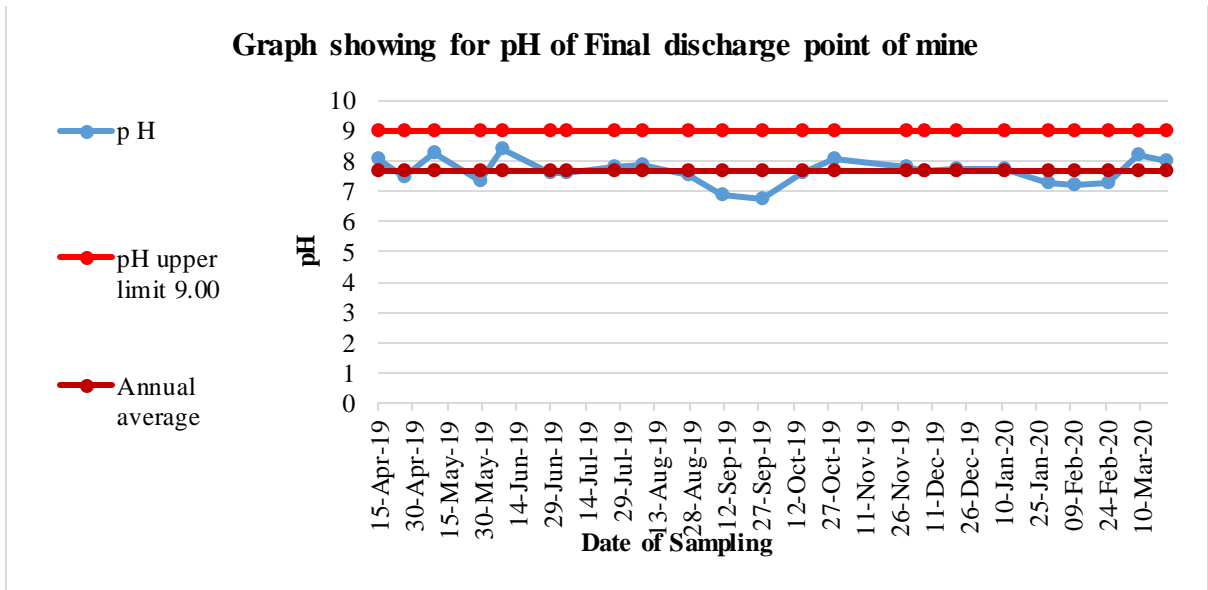
**Monitoring station:** Final Discharge point of mine

Date of Sampling	p H	Oil & Grease	COD	TSS
21-Mar-20	8.02	<4.0	30	96
09-Mar-20	8.16	<4.0	36	84
25-Feb-20	7.28	<4.0	24	32
10-Feb-20	7.22	<4.0	58	164
30-Jan-20	7.25	<4.0	20	44
11-Jan-20	7.72	<4.0	14	40
21-Dec-19	7.72	<4.0	48	16
07-Dec-19	7.64	<4.0	20	28
29-Nov-19	7.82	<4.0	56	20
29-Oct-19	8.05	<4.0	34	56
15-Oct-19	7.61	<4.0	18	28
28-Sep-19	6.73	<4.0	30	48
11-Sep-19	6.85	<4.0	19	12
27-Aug-19	7.56	<4.0	72	40
07-Aug-19	7.85	<4.0	26	28
26-Jul-19	7.81	<4.0	29	52
05-Jul-19	7.62	<4.0	38	80
28-Jun-19	7.60	<4.0	48	36
07-Jun-19	8.41	<4.0	59	24
29-May-19	7.36	<4.0	36	10
09-May-19	8.23	<4.0	73	24.8
26-Apr-19	7.49	<4.0	65	20
15-Apr-19	8.08	<4.0	38	12

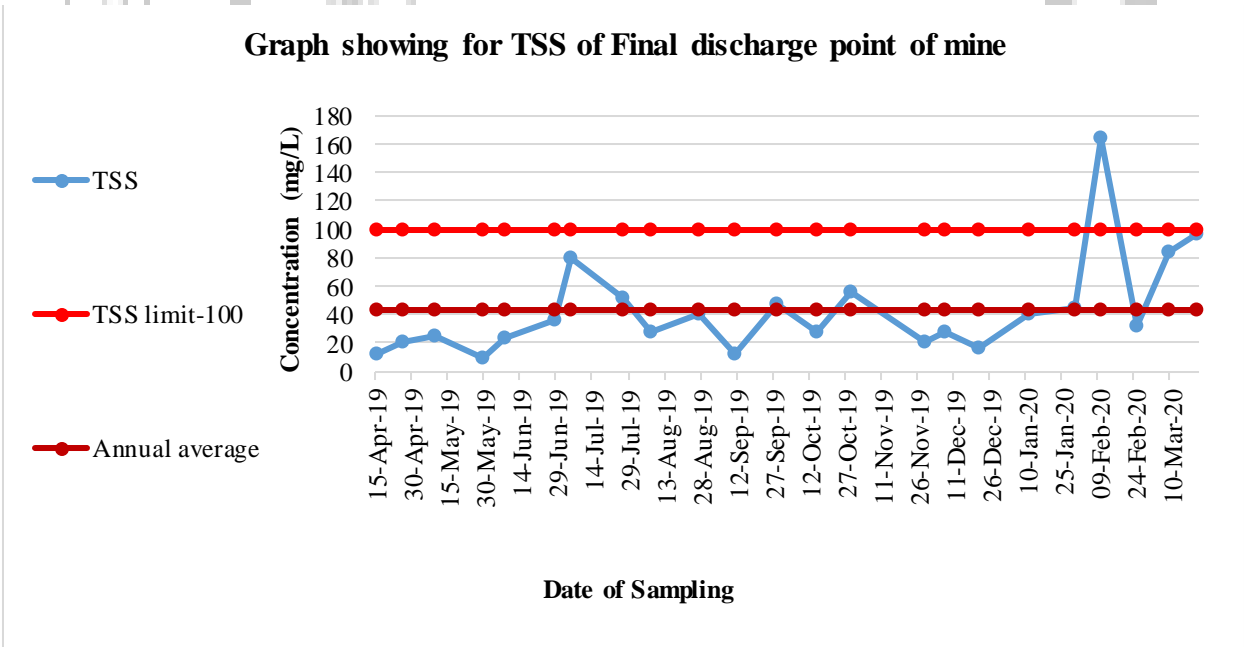


ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

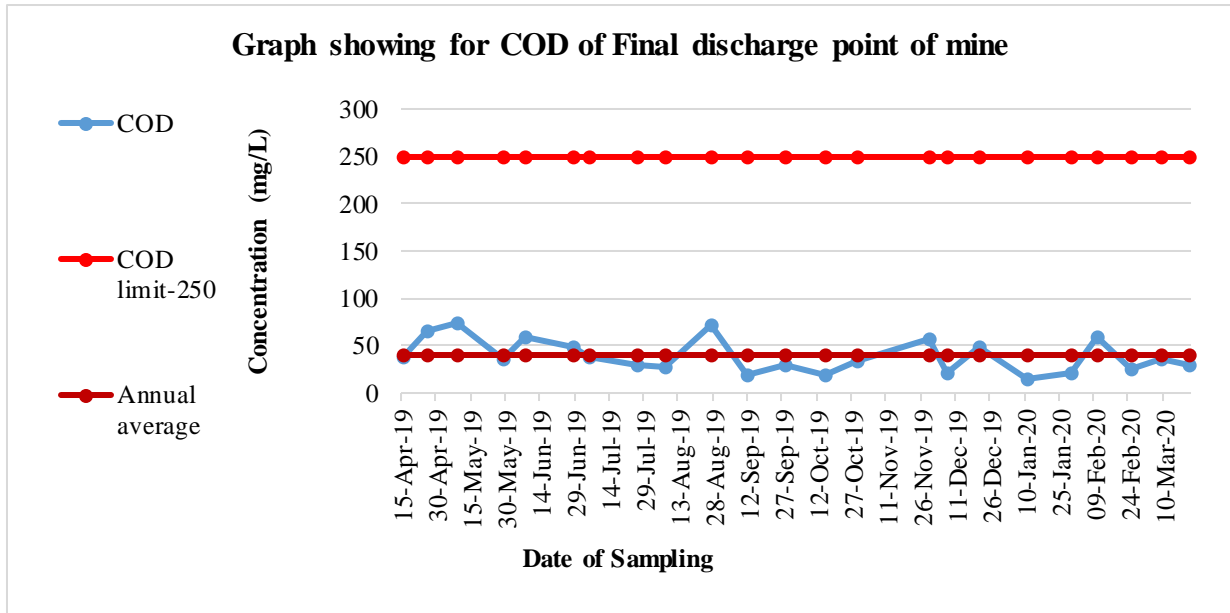
Graph showing for pH of Final discharge point of mine



Graph showing for TSS of Final discharge point of mine



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

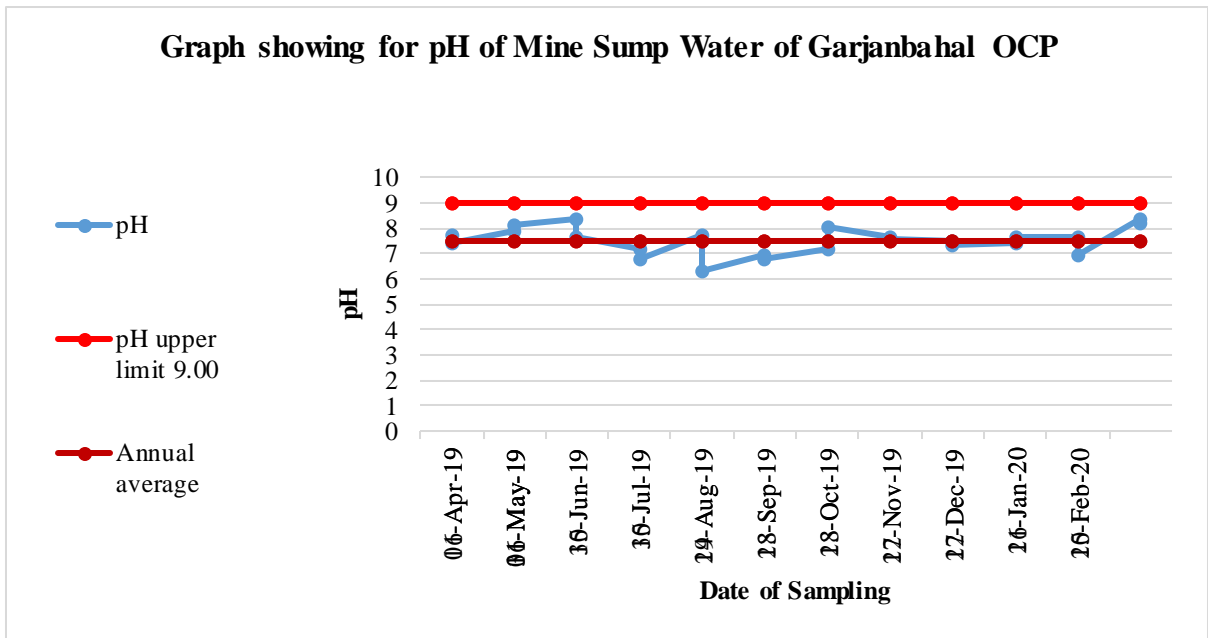
Table:110

**Area:** Basundhara Garjanbahal  
**Project :** Garjanbahal OCP  
**Monitoring station:** Mine Sump Water

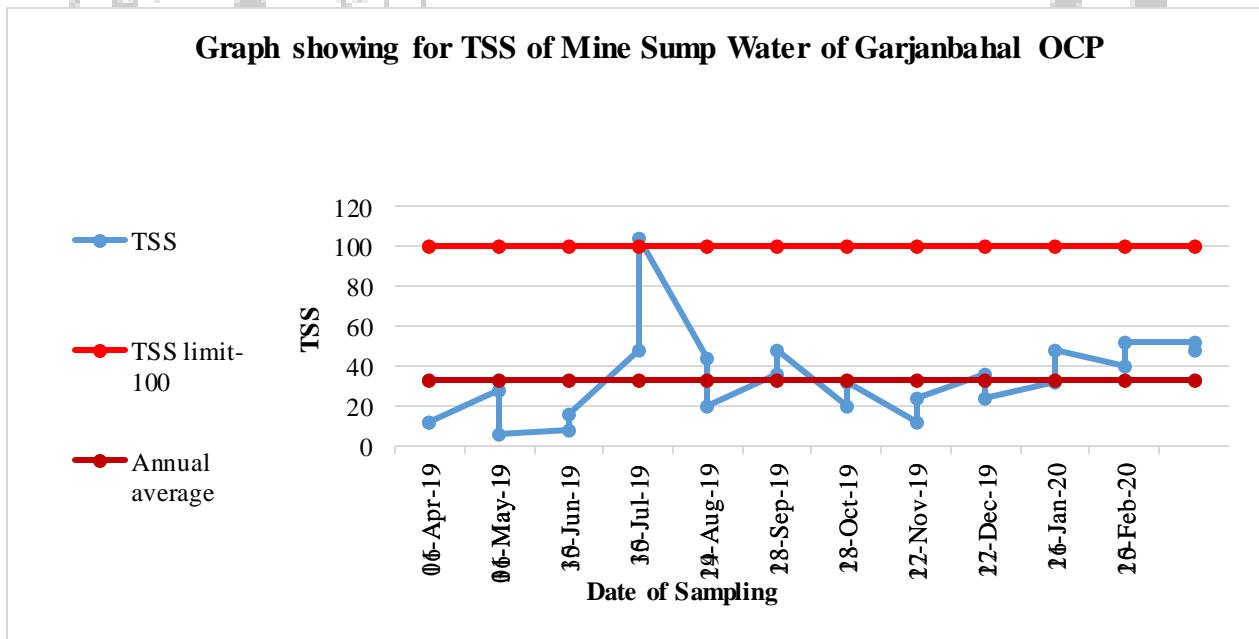
Date of Sampling	pH	Oil & Grease	COD	TSS
21-Mar-20	8.23	<4.0	20	48
09-Mar-20	8.35	<4.0	22	52
25-Feb-20	6.91	<4.0	30	52
10-Feb-20	7.67	<4.0	18	40
30-Jan-20	7.68	<4.0	22	48
11-Jan-20	7.40	<4.0	20	32
21-Dec-19	7.36	<4.0	34	24
07-Dec-19	7.48	<4.0	24	36
29-Nov-19	7.54	<4.0	24	24
13-Nov-19	7.65	<4.0	22	12
29-Oct-19	8.04	<4.0	12	32
15-Oct-19	7.14	<4.0	20	20
28-Sep-19	6.82	<4.0	38	48
11-Sep-19	6.96	<4.0	20	36
27-Aug-19	6.27	<4.0	20	20
07-Aug-19	7.72	<4.0	20	44
26-Jul-19	6.80	<4.0	57	104
05-Jul-19	7.14	<4.0	24	48
28-Jun-19	7.66	<4.0	37	16
07-Jun-19	8.37	<4.0	28	8
29-May-19	8.11	<4.0	18	6.4
09-May-19	7.92	<4.0	67	28.4
26-Apr-19	7.45	<4.0	40	12
15-Apr-19	7.70	<4.0	37	12

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

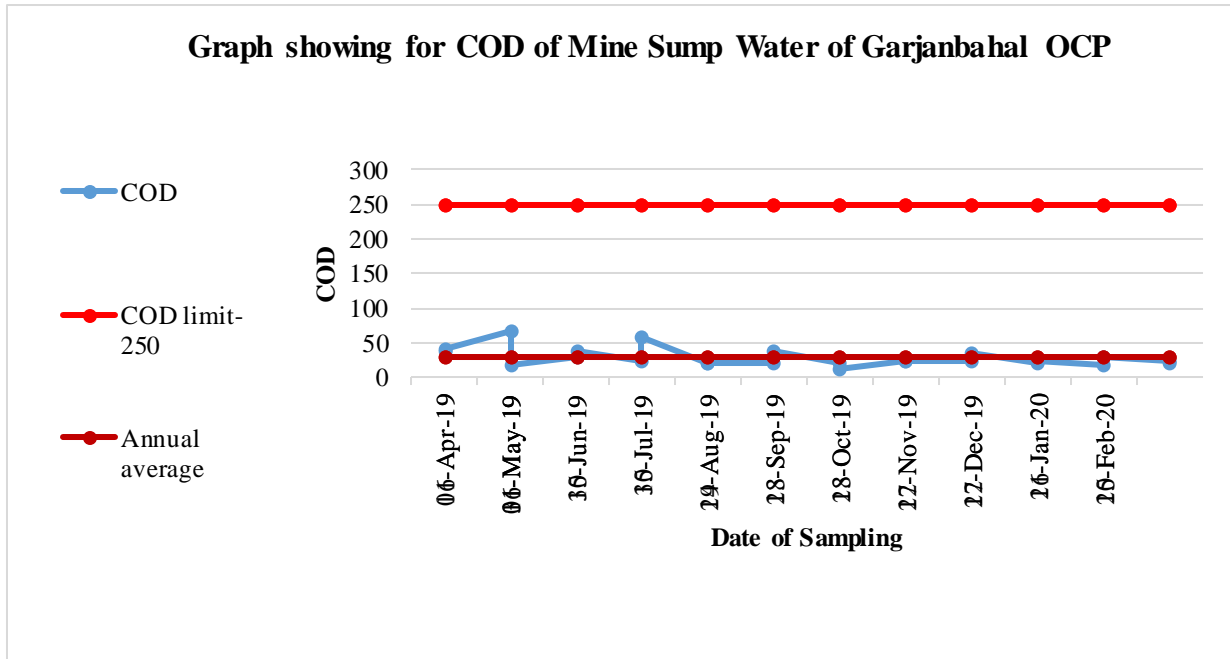
Graph showing for pH of Mine Sump Water of Garjanbahal OCP



Graph showing for TSS of Mine Sump Water of Garjanbahal OCP



Graph showing for COD of Mine Sump Water of Garjanbahal OCP



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:111

**Area:** Basundhara Garjanbahal

**Project:** Garjanbahal OCP

**Monitoring station:** Outlet of Settling pond

Date of Sampling	Ph	Oil & Grease	COD	TSS
26-Apr-19	7.48	<4.0	55	20
28-Jun-19		DRY		
05-Jul-19		DRY		
26-Jul-19		DRY		
07-Aug-19		DRY		
27-Aug-19		DRY		
11-Sep-19		DRY		
15-Oct-19		DRY		
29-Oct-19		DRY		
29-Nov-19		DRY		
07-Dec-19		DRY		



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:112

**Area:** Basundhara Garjanbahal

**Project:** Basundhara (W) OCP

**Monitoring station:** Inlet of Settling pond at Excavation workshop

Date of Sampling	pH	Oil & Grease	COD	TSS
21-Mar-20	7.62	<4.0	30	56
09-Mar-20	7.81	<4.0	26	48
25-Feb-20	6.77	<4.0	42	64
10-Feb-20	DRY			
07-Dec-19	DRY			
29-Nov-19	DRY			
13-Nov-19	DRY			
29-Oct-19	DRY			
15-Oct-19	DRY			
11-Sep-19	DRY			
27-Aug-19	7.18	<4.0	42	24
07-Aug-19	DRY			
26-Jul-19	DRY			
05-Jul-19	7.52	<4.0	12	36
28-Jun-19	7.59	<4.0	73	60
07-Jun-19	7.86	<4.0	83	60
29-May-19	DRY			
09-May-19	DRY			
26-Apr-19	7.71	4.4	51	28
15-Apr-19	7.50	<4.0	63	32

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:113

**Area:** Basundhara Garjanbahal

**Project :** Basundhara (W) OCP

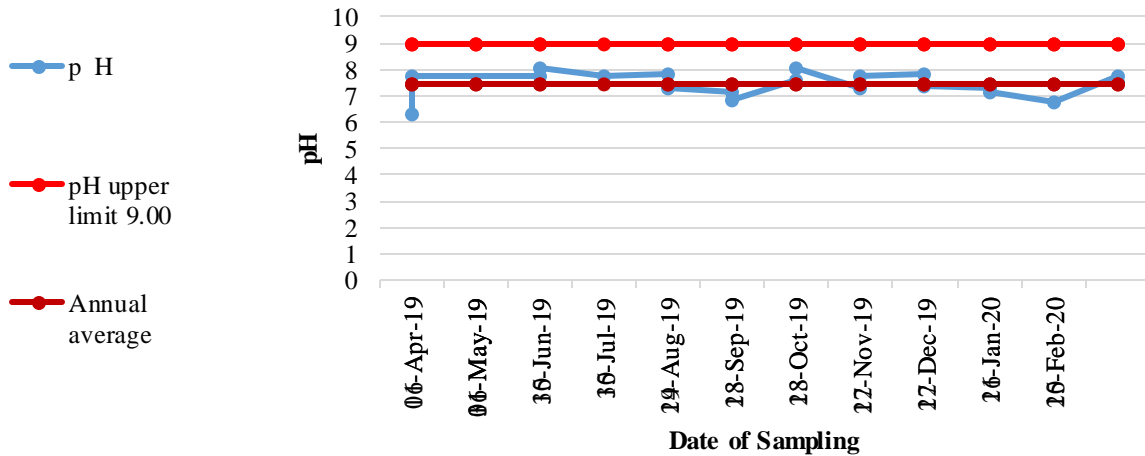
**Monitoring station:** Outlet of Settling pond at Excavation workshop

Date of Sampling	pH	Oil & Grease	COD	TSS
15-Apr-19	6.35	<4.0	51	20
26-Apr-19	7.78	<4.0	33	16
09-May-19	NO DISCHARGE			
29-May-19	NO DISCHARGE			
07-Jun-19	7.79	<4.0	55	24
28-Jun-19	8.08	<4.0	26	12
26-Jul-19	7.79	<4.0	42	84
07-Aug-19	7.86	<4.0	18	24
27-Aug-19	7.27	<4.0	34	16
11-Sep-19	7.18	<4.0	22	16
28-Sep-19	6.83	<4.0	39	52
15-Oct-19	7.63	<4.0	24	36
29-Oct-19	8.03	<4.0	20	24
13-Nov-19	7.27	<4.0	20	96
29-Nov-19	7.74	<4.0	28	16
07-Dec-19	7.81	<4.0	16	12
21-Dec-19	7.35	<4.0	22	28
11-Jan-20	7.34	<4.0	16	44
30-Jan-20	7.15	<4.0	18	36
10-Feb-20	NO DISCHARGE			
25-Feb-20	6.79	<4.0	20	16
09-Mar-20	7.76	<4.0	18	32
21-Mar-20	7.51	<4.0	22	40

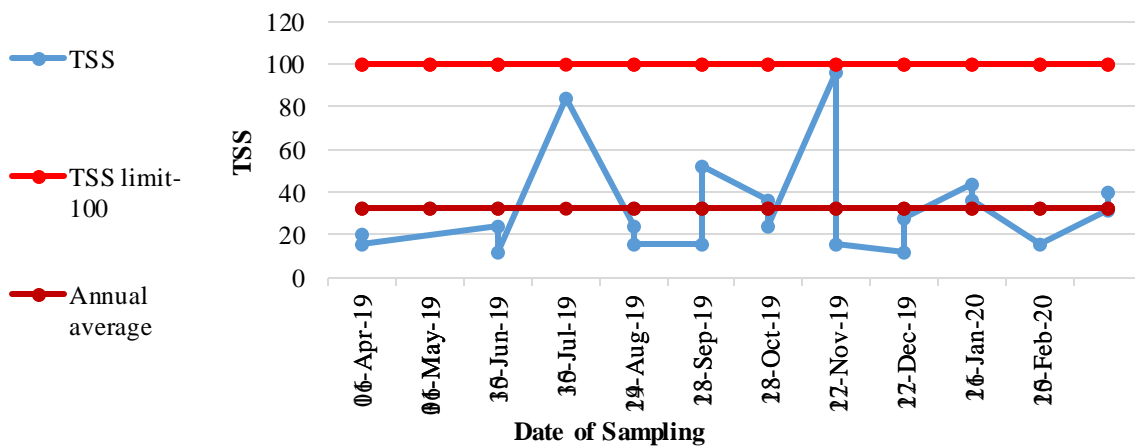


ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

**Graph showing for pH of Outlet from Settling Pond at Excavation Workshop of Basundhara (W)**

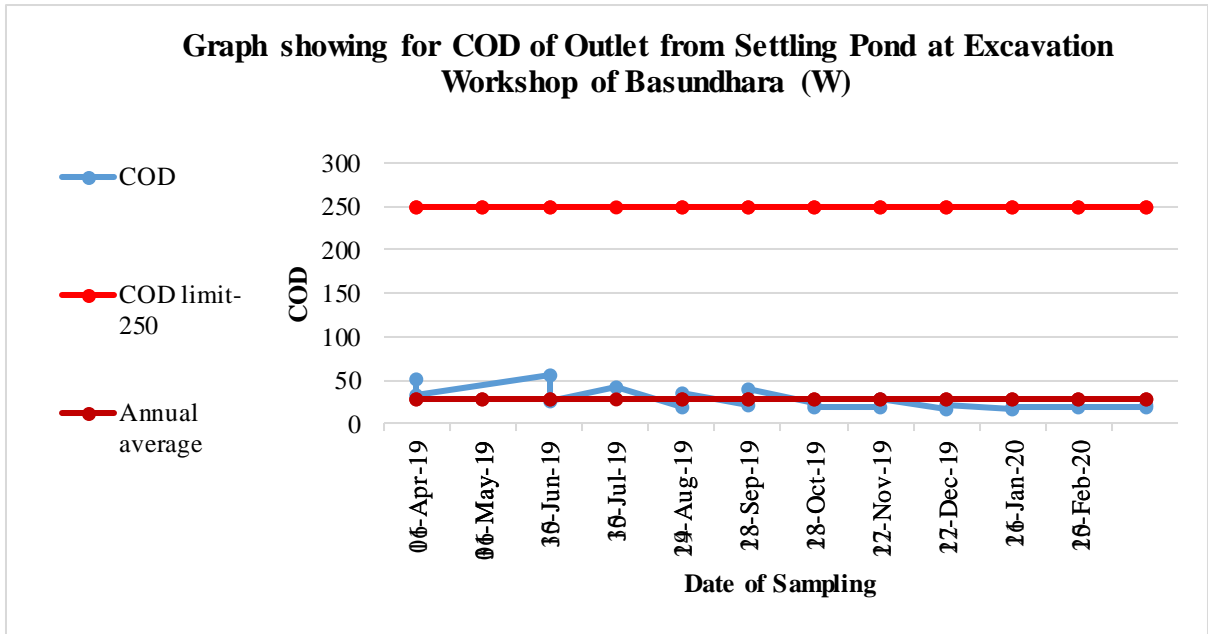


**Graph showing for TSS of Outlet from Settling Pond at Excavation Workshop of Basundhara (W)**



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Graph showing for COD of Outlet from Settling Pond at Excavation Workshop of Basundhara (W)



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:114

**Area:** Basundhara Garjanbahal

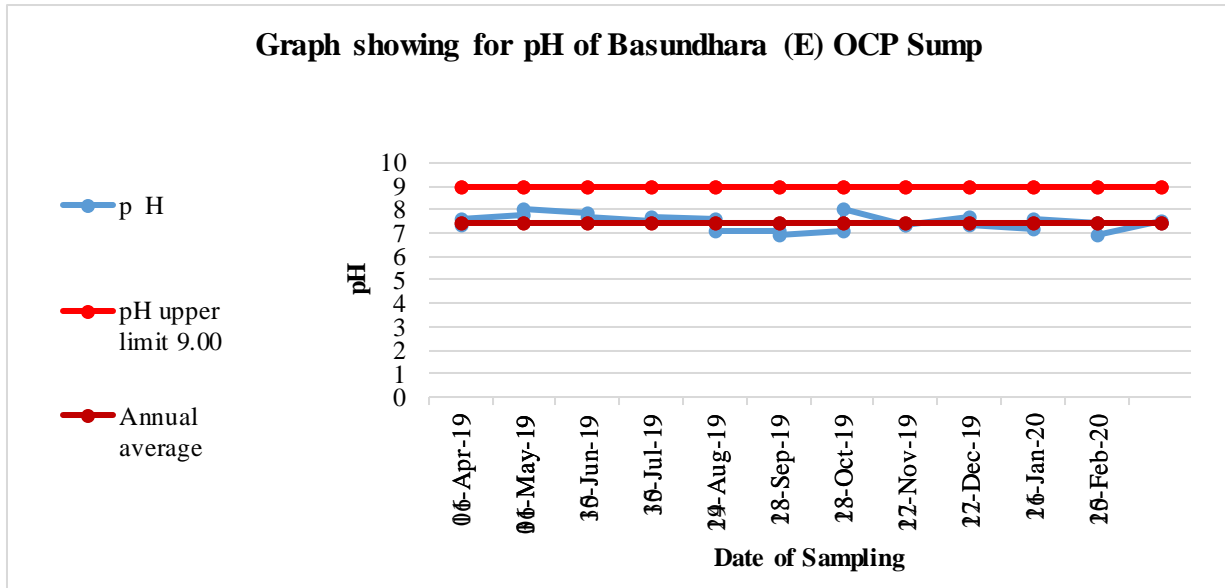
**Project:** Basundhara (W) OCP

**Monitoring station:** Basundhara (E) OCP Sump

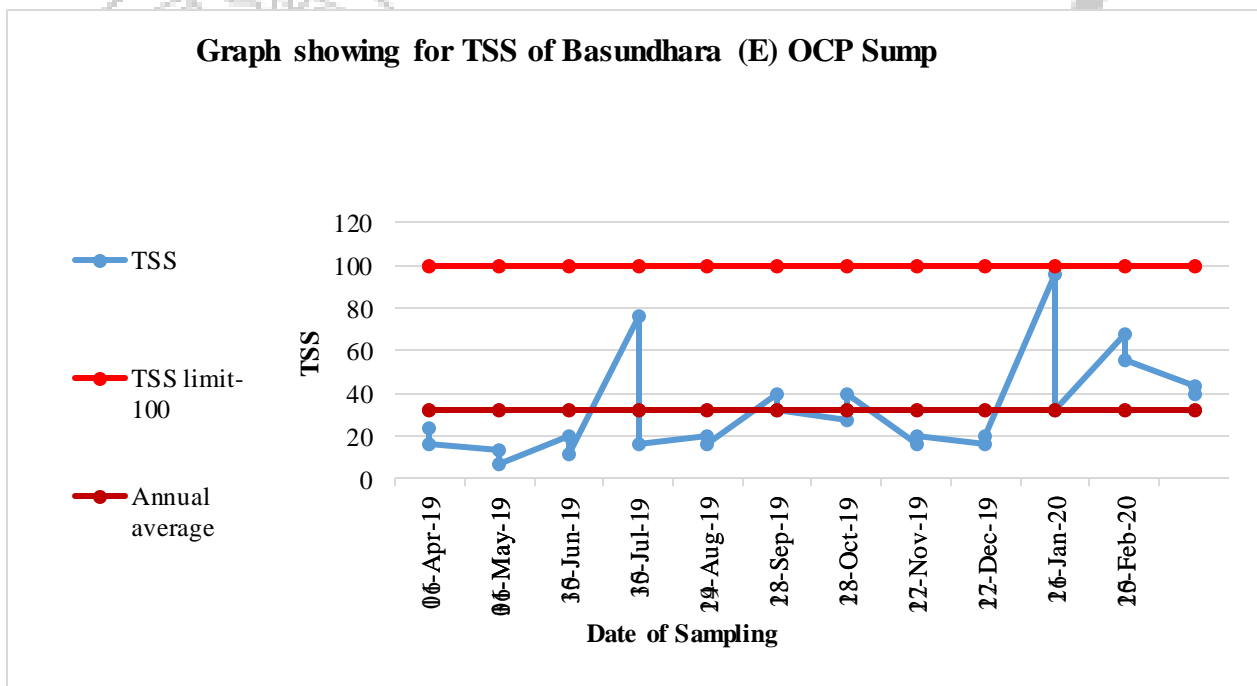
Date of Sampling	Ph	Oil & Grease	TSS	COD
15-Apr-19	7.38	<4.0	59	24
26-Apr-19	7.61	<4.0	44	16
09-May-19	7.76	<4.0	55	13.6
29-May-19	7.98	<4.0	20	6.8
07-Jun-19	7.82	<4.0	49	20
28-Jun-19	7.70	<4.0	31	12
05-Jul-19	7.50	<4.0	30	76
26-Jul-19	7.70	<4.0	12	16
07-Aug-19	7.60	<4.0	20	20
27-Aug-19	7.08	<4.0	24	16
11-Sep-19	7.11	<4.0	18	40
28-Sep-19	6.90	<4.0	32	32
15-Oct-19	7.09	<4.0	36	28
29-Oct-19	8.06	<4.0	28	40
13-Nov-19	7.34	<4.0	26	16
29-Nov-19	7.37	<4.0	44	20
07-Dec-19	7.70	<4.0	18	16
21-Dec-19	7.31	<4.0	28	20
11-Jan-20	7.19	5.2	28	96
30-Jan-20	7.56	<4.0	28	32
10-Feb-20	7.39	<4.0	20	68
25-Feb-20	6.89	<4.0	36	56
09-Mar-20	7.51	<4.0	20	44
21-Mar-20	7.41	<4.0	24	40

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Graph showing for pH of Basundhara (E) OCP Sump

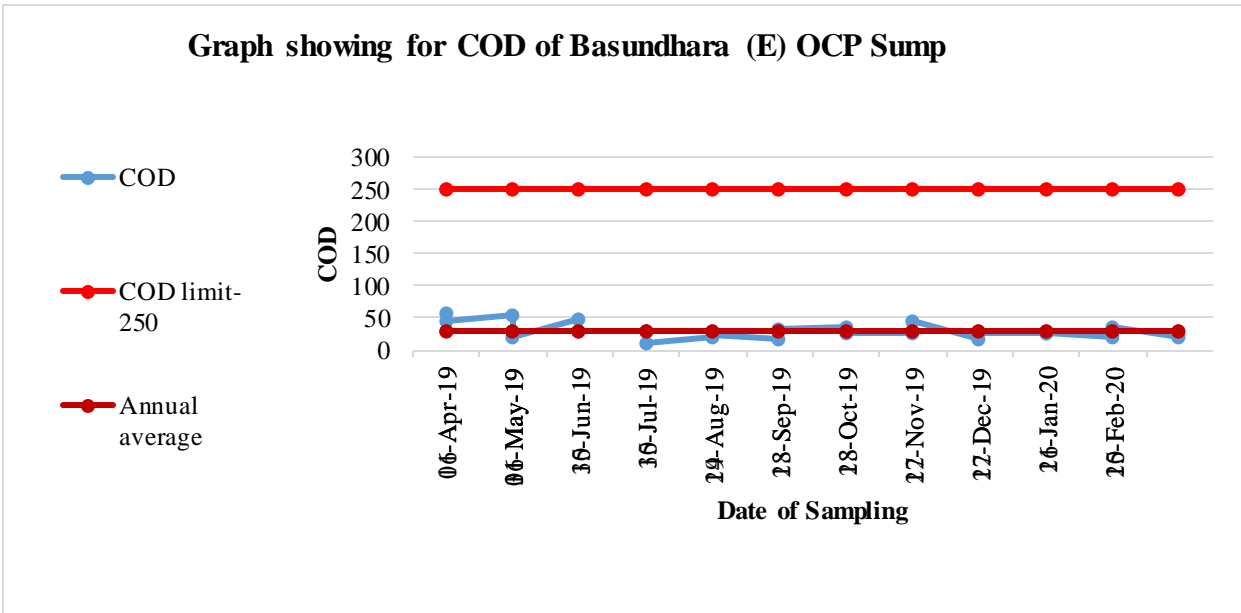


Graph showing for TSS of Basundhara (E) OCP Sump



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Graph showing for COD of Basundhara (E) OCP Sump



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:115

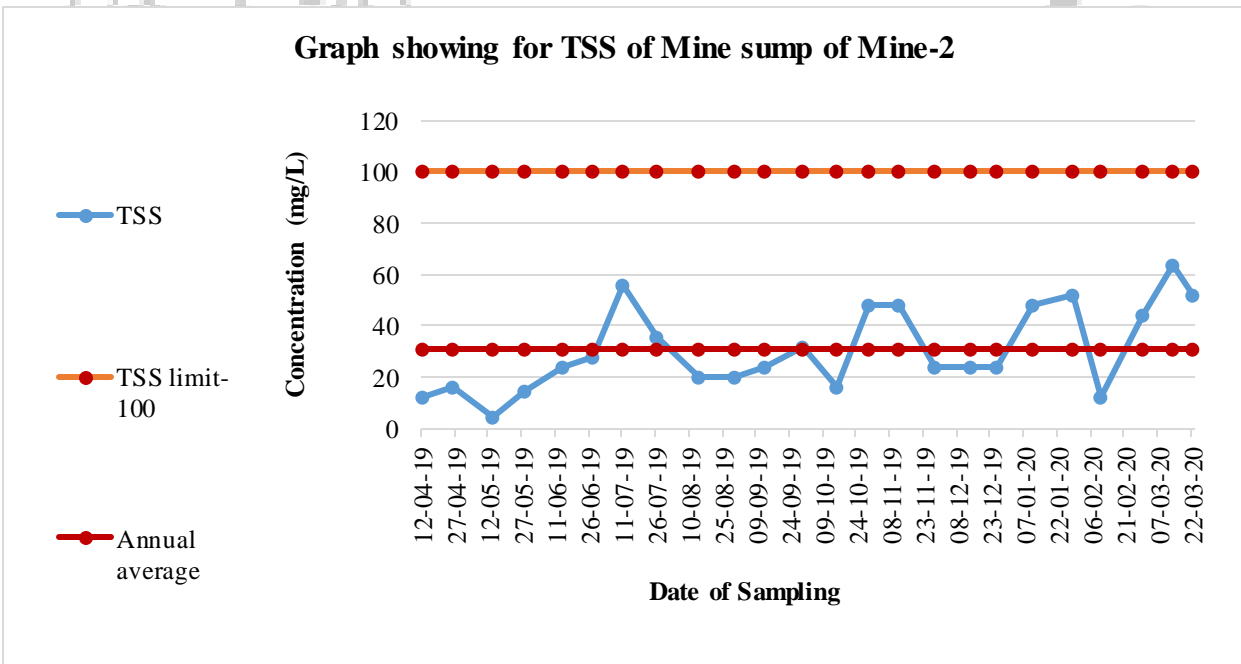
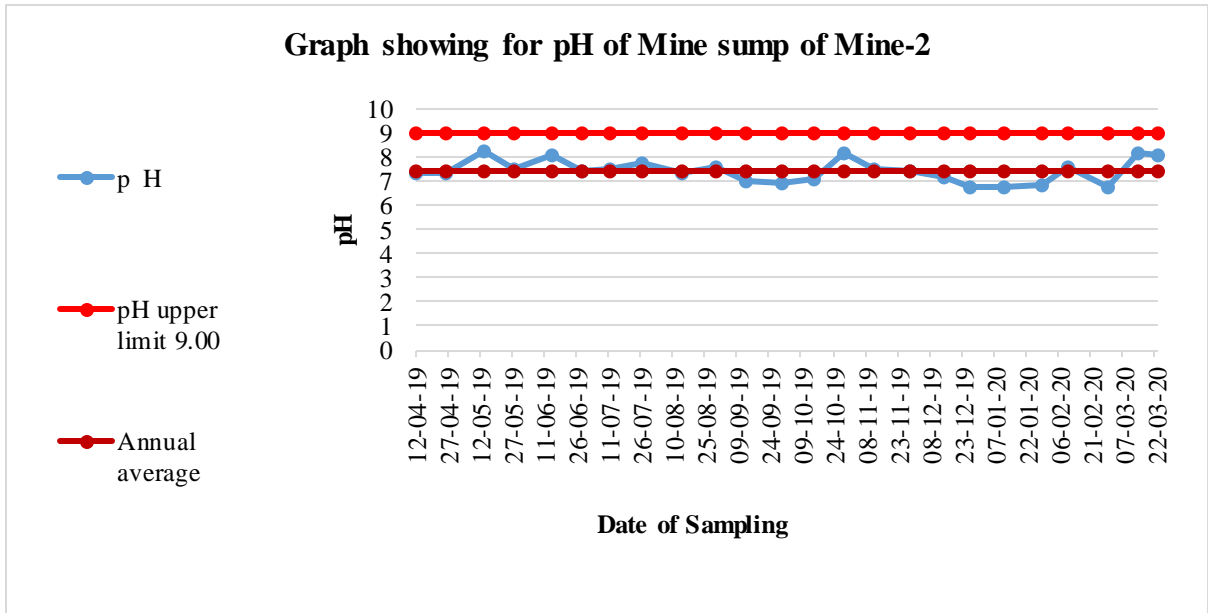
**Area:** Orient

**Project:** Orient Mine No 2

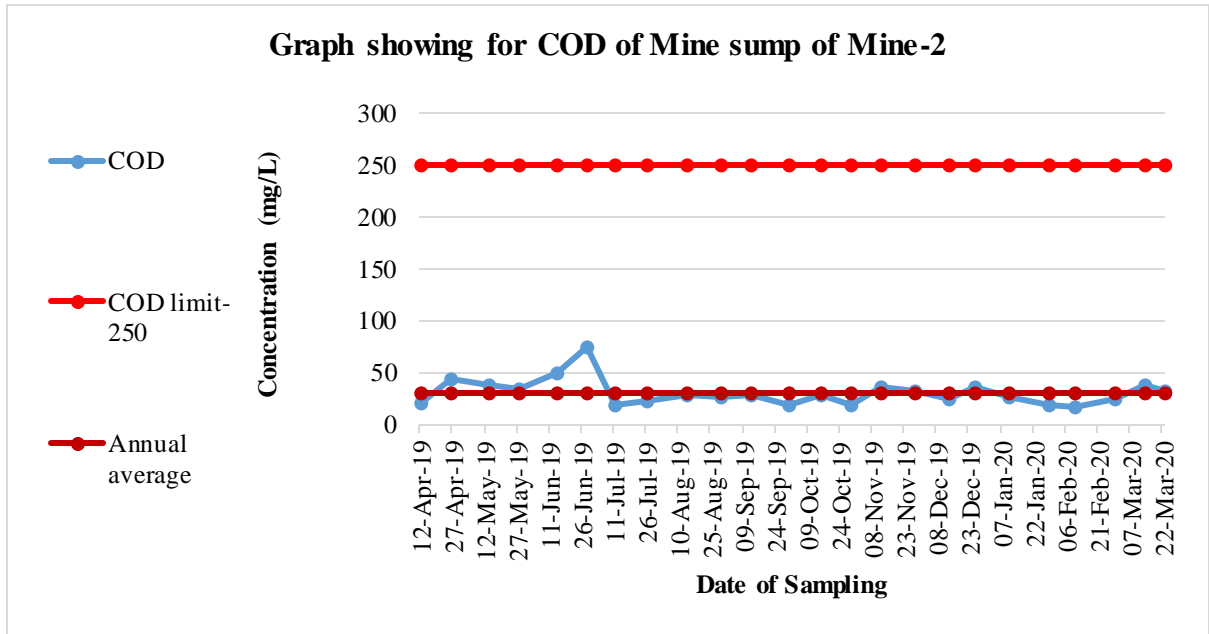
**Monitoring station:** Mine sump of Mine 2

Date of Sampling	Ph	Oil & Grease	COD	TSS
12-Apr-19	7.32	<4.0	21	12
26-Apr-19	7.34	<4.0	44	16
14-May-19	8.29	<4.0	37	4.8
28-May-19	7.50	<4.0	34	14.8
14-Jun-19	8.08	<4.0	49	24
28-Jun-19	7.44	<4.0	74	28
11-Jul-19	7.52	<4.0	18	56
26-Jul-19	7.77	<4.0	22	36
14-Aug-19	7.38	<4.0	28	20
30-Aug-19	7.58	<4.0	26	20
13-Sep-19	6.98	<4.0	28	24
30-Sep-19	6.93	<4.0	18	32
15-Oct-19	7.10	<4.0	28	16
29-Oct-19	8.16	<4.0	18	48
12-Nov-19	7.54	<4.0	36	48
28-Nov-19	7.43	<4.0	32	24
14-Dec-19	7.18	<4.0	24	24
26-Dec-19	6.78	<4.0	36	24
11-Jan-20	6.78	<4.0	26	48
29-Jan-20	6.86	<4.0	18	52
10-Feb-20	7.60	<4.0	16	12
29-Feb-20	6.73	<4.0	24	44
14-Mar-20	8.20	<4.0	38	64
23-Mar-20	8.07	<4.0	32	52

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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:116

**Area:** Orient

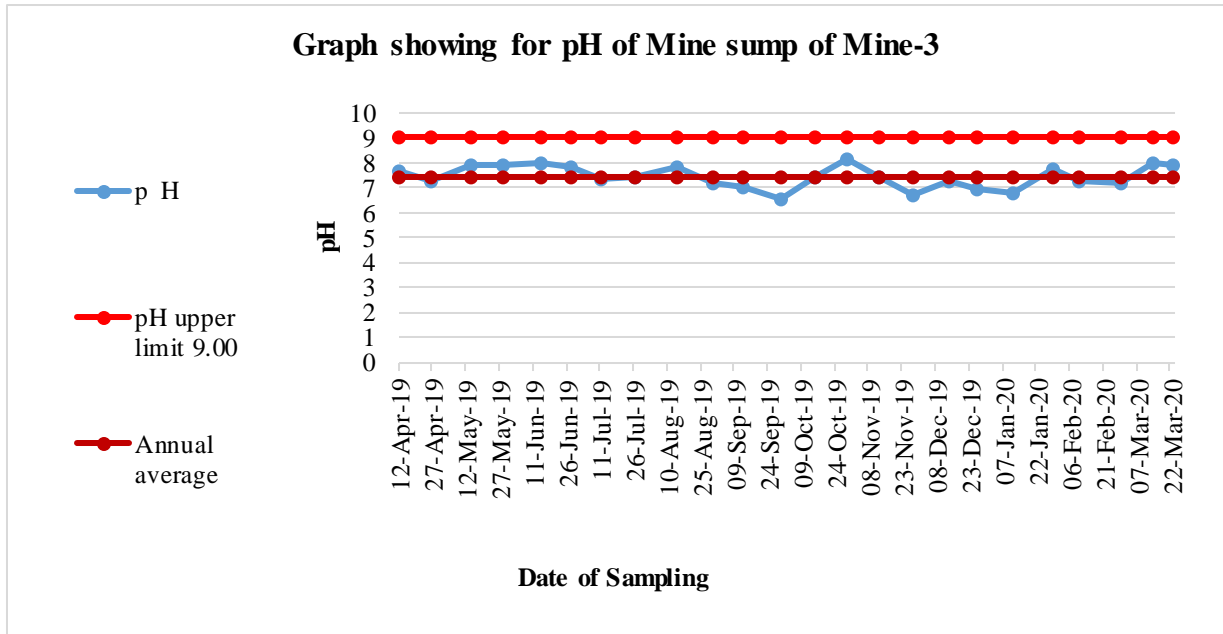
**Project:** Orient Mine No 3

**Monitoring station:** Mine sump of Mine 3

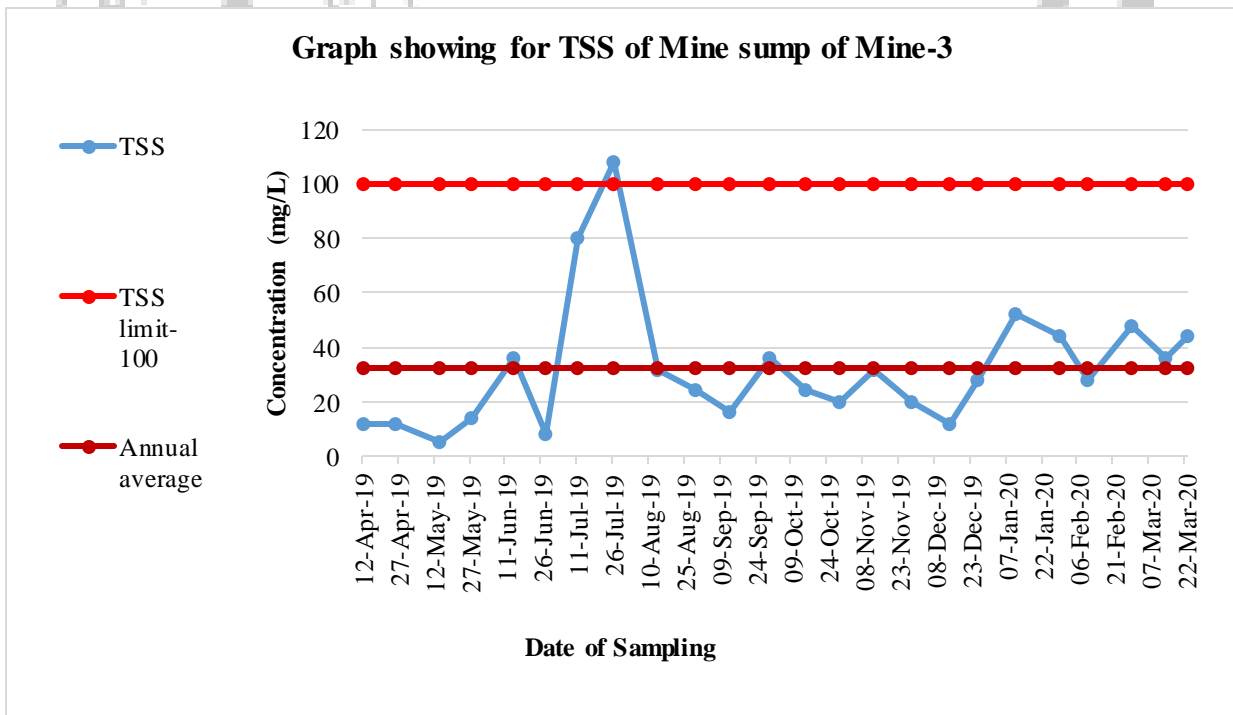
Date of Sampling	p H	Oil & Grease	COD	TSS
12-Apr-19	7.69	<4.0	27	12
26-Apr-19	7.24	<4.0	38	12
14-May-19	7.89	<4.0	33	5.2
28-May-19	7.88	<4.0	31	14
14-Jun-19	7.97	<4.0	33	36
28-Jun-19	7.87	<4.0	25	8
11-Jul-19	7.36	<4.0	20	80
26-Jul-19	7.41	<4.0	59	108
14-Aug-19	7.83	<4.0	22	32
30-Aug-19	7.19	<4.0	22	24
13-Sep-19	7.03	<4.0	16	16
30-Sep-19	6.57	<4.0	28	36
15-Oct-19	7.44	<4.0	22	24
29-Oct-19	8.18	<4.0	16	20
12-Nov-19	7.42	<4.0	28	32
28-Nov-19	6.70	<4.0	22	20
14-Dec-19	7.23	<4.0	22	12
26-Dec-19	6.96	<4.0	40	28
11-Jan-20	6.75	<4.0	22	52
29-Jan-20	7.74	<4.0	20	44
10-Feb-20	7.26	<4.0	12	28
29-Feb-20	7.17	<4.0	32	48
14-Mar-20	8.01	<4.0	24	36
23-Mar-20	7.92	<4.0	18	44

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Graph showing for pH of Mine sump of Mine-3

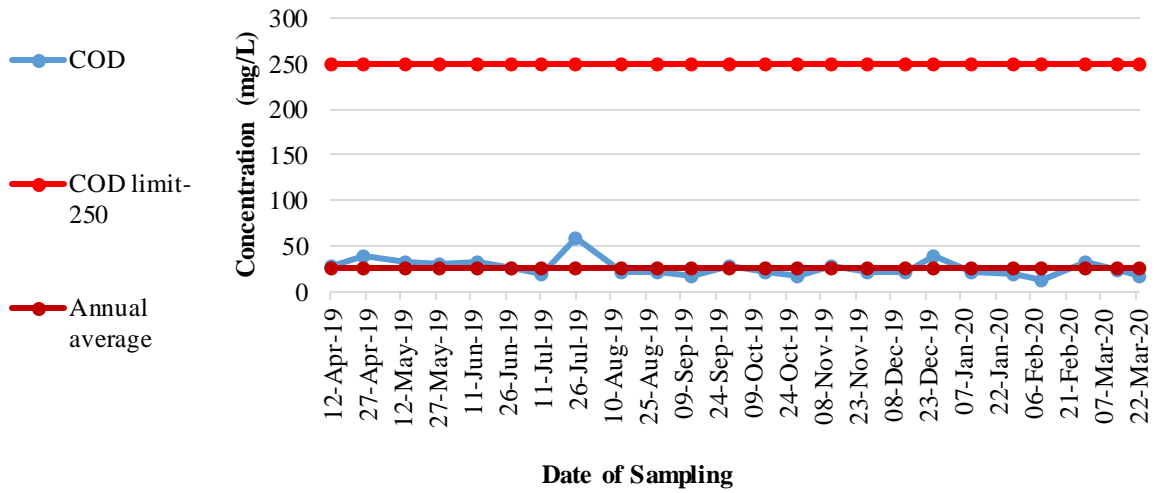


Graph showing for TSS of Mine sump of Mine-3



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Graph showing for COD of Mine sump of Mine-3



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:117

**Area:** Orient

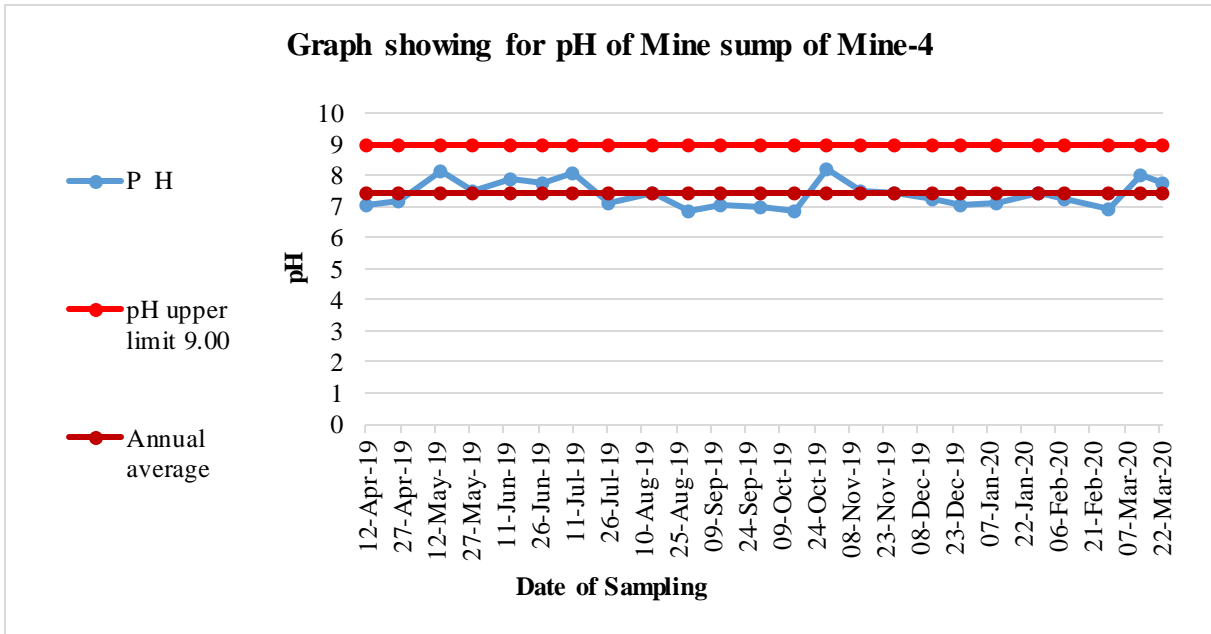
**Project:** Orient Mine No 4

**Monitoring station:** Mine sump of Mine 4

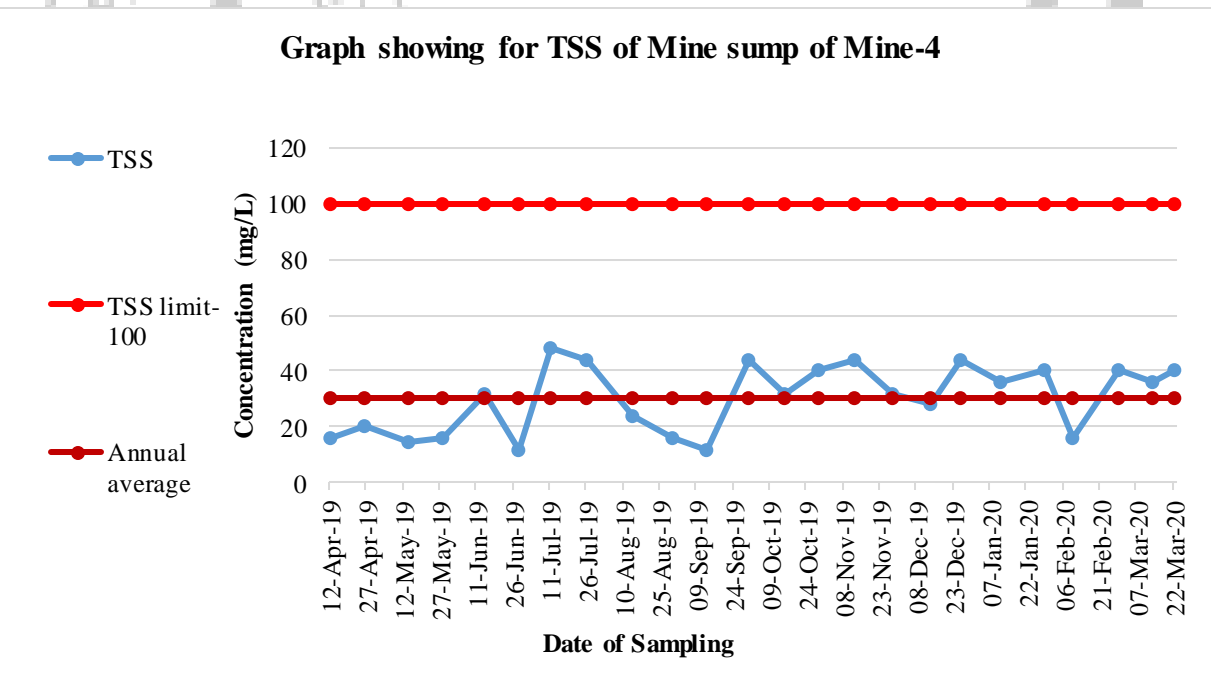
Date of Sampling	pH	Oil and Grease	COD	TSS
12-Apr-19	7.05	<4.0	33	16
26-Apr-19	7.16	<4.0	43	20
14-May-19	8.11	<4.0	36	14.8
28-May-19	7.51	<4.0	34	16
14-Jun-19	7.87	<4.0	55	32
28-Jun-19	7.77	<4.0	31	12
11-Jul-19	8.10	<4.0	18	48
26-Jul-19	7.09	<4.0	28	44
14-Aug-19	7.45	<4.0	24	24
30-Aug-19	6.85	<4.0	28	16
13-Sep-19	7.05	<4.0	23	12
30-Sep-19	6.96	<4.0	29	44
15-Oct-19	6.82	<4.0	46	32
29-Oct-19	8.19	<4.0	24	40
13-Nov-19	7.50	<4.0	38	44
28-Nov-19	7.44	<4.0	28	32
14-Dec-19	7.21	<4.0	20	28
26-Dec-19	7.05	<4.0	32	44
11-Jan-20	7.08	<4.0	18	36
29-Jan-20	7.41	<4.0	22	40
10-Feb-20	7.24	<4.0	18	16
29-Feb-20	6.91	<4.0	26	40
14-Mar-20	7.98	<4.0	20	36
23-Mar-20	7.75	<4.0	24	40

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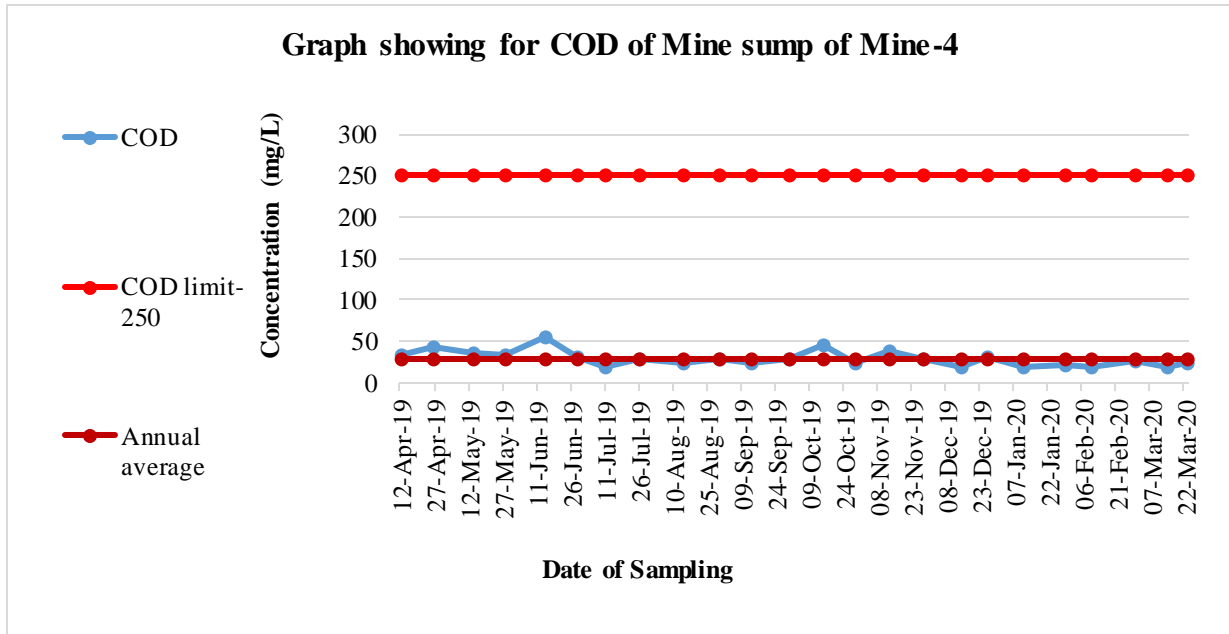
Graph showing for pH of Mine sump of Mine-4



Graph showing for TSS of Mine sump of Mine-4



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Table:118

**Area:** Orient

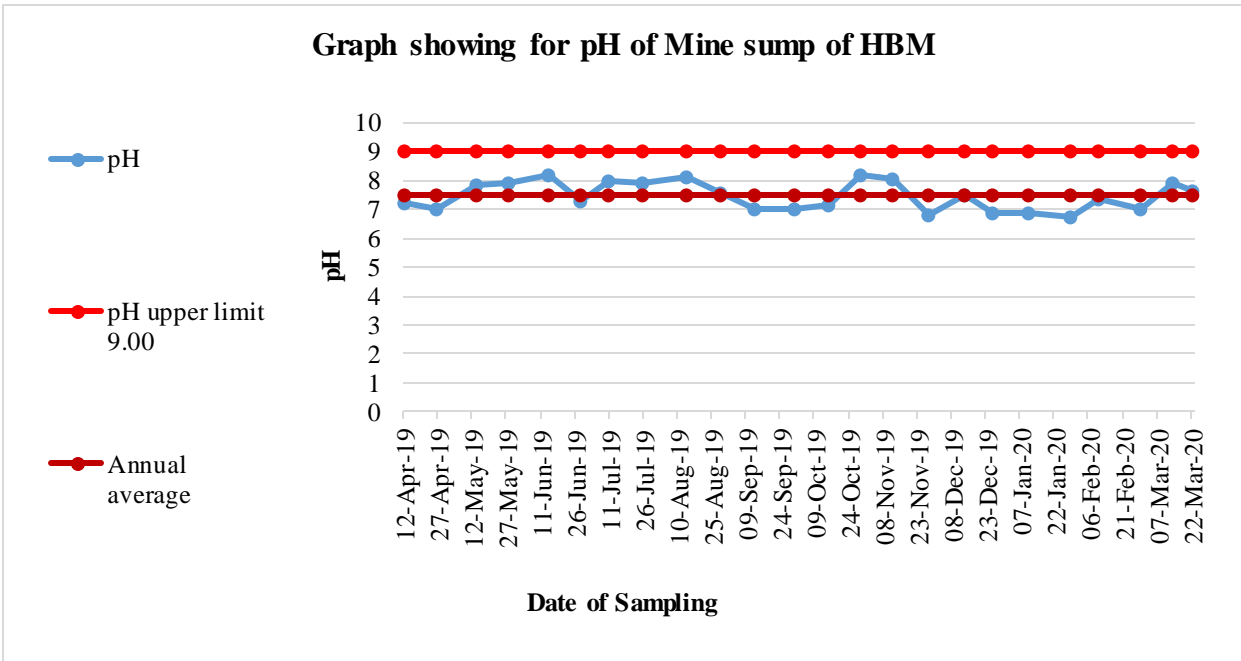
**Project:** HBI Mine

**Monitoring station:** Mine sump of HBM

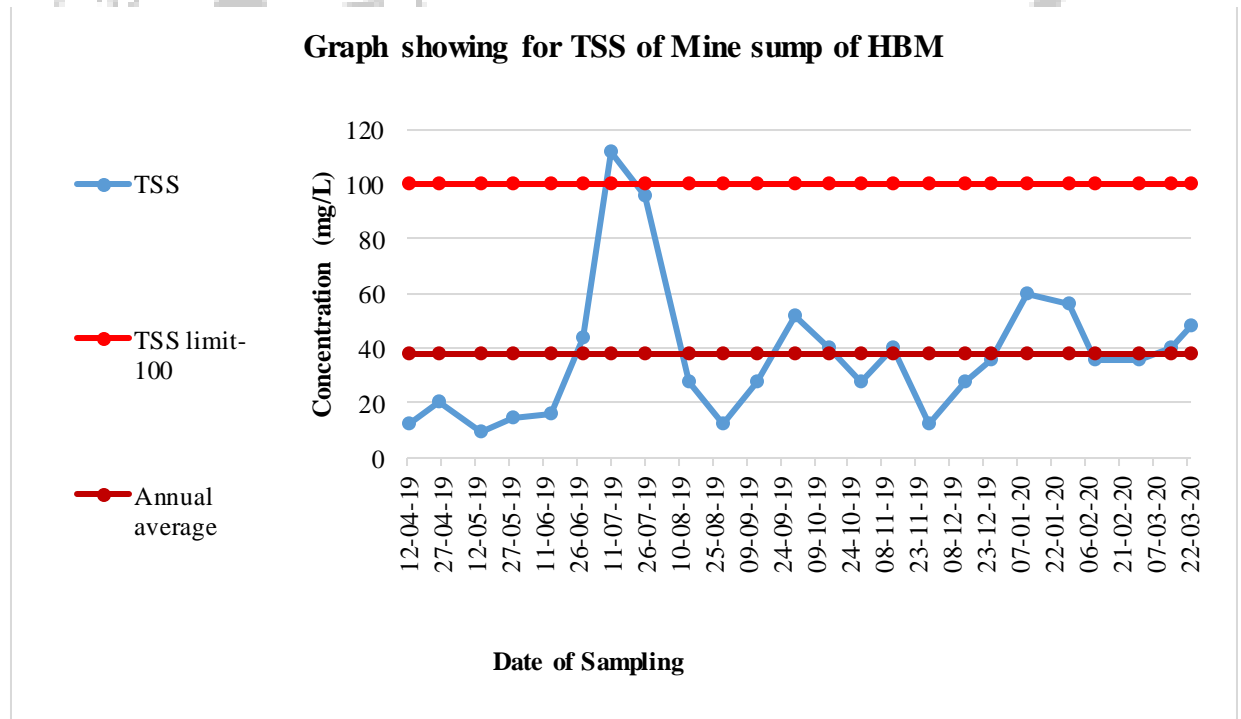
Date of Sampling	pH	Oil & Grease	COD	TSS
12-Apr-19	7.22	<4.0	27	12
26-Apr-19	7.02	<4.0	54	20
14-May-19	7.85	<4.0	46	9.2
28-May-19	7.93	<4.0	27	14.4
14-Jun-19	8.17	<4.0	24	16
28-Jun-19	7.27	<4.0	63	44
11-Jul-19	7.95	<4.0	48	112
26-Jul-19	7.91	<4.0	48	96
14-Aug-19	8.10	<4.0	26	28
29-Aug-19	7.58	<4.0	20	12
13-Sep-19	7.02	<4.0	25	28
30-Sep-19	6.99	<4.0	38	52
15-Oct-19	7.18	<4.0	52	40
29-Oct-19	8.17	<4.0	32	28
12-Nov-19	8.06	<4.0	32	40
28-Nov-19	6.80	<4.0	34	12
14-Dec-19	7.51	<4.0	46	28
26-Dec-19	6.86	<4.0	26	36
11-Jan-20	6.87	<4.0	24	60
29-Jan-20	6.76	<4.0	26	56
10-Feb-20	7.39	<4.0	14	36
29-Feb-20	6.98	<4.0	20	36
14-Mar-20	7.89	<4.0	28	40
23-Mar-20	7.61	<4.0	26	48

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Graph showing for pH of Mine sump of HBM

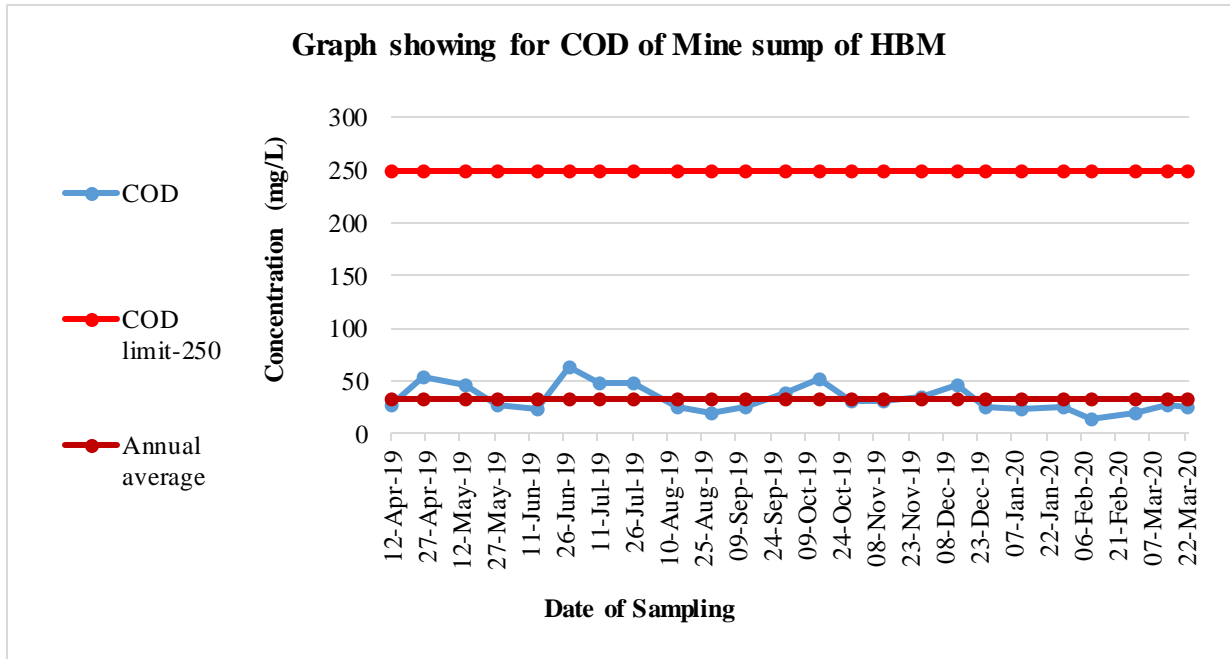


Graph showing for TSS of Mine sump of HBM





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**EFFLUENT (22 PARAMETER) QUALITY MONITORING**

Table:119

<b>Project (OCP / UG)</b>	<b>Smleswari</b>	<b>MoEF-Sch-VI Standards</b>
<b>NAME OF THE STATION</b>	<b>Outlet from Sedimentation Pond</b>	
<b>Date</b>	<b>8-Nov-2019</b>	
<b>Colour (Hazen)</b>	4	–
<b>Odour</b>	Unobjectionable	–
<b>Temperature(°C)</b>	24.7	<b>Shall not exceed 5 °C above the receiving temperature</b>
<b>Nitrate Nitrogen(mg/L)(As N)</b>	<5.0	<b>10</b>
<b>Ammonical Nitrogen, mg/l (As N)</b>	<0.5	<b>50</b>
<b>Total Kjeldhal Nitrogen, mg/l (As N)</b>	1.33	<b>100</b>
<b>BOD [3 days at 27oC] (mg/L)</b>	3.8	<b>30</b>
<b>Arsenic, mg/l</b>	<0.005	<b>0.2</b>
<b>Lead, mg/l</b>	<0.005	<b>0.1</b>
<b>Hexavalent Chromium(mg/L)</b>	<0.05	<b>0.1</b>
<b>Total Chromium(mg/L)</b>	<0.01	<b>2</b>
<b>Copper(mg/L)</b>	<0.03	<b>3</b>
<b>Zinc(mg/L)</b>	<0.04	<b>5</b>
<b>Cadmium, mg/l</b>	<0.001	<b>2</b>
<b>Nickel(mg/L)</b>	<0.10	<b>3</b>
<b>Fluoride(mg/L)</b>	0.44	<b>2</b>
<b>Manganese(mg/L)</b>	2.23	<b>2</b>
<b>Iron(mg/L)</b>	<0.10	<b>3</b>
<b>Disolved Phosphate(mg/L)</b>	<1.0	<b>5</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:120

Project (OCP / UG)	Lajkura OCP	
NAME OF THE STATION	Outlet of MDTP	MoEF-Sch-VI Standards
Date	13-Nov-19	
Colour(Hazen)	3	–
Odour	Unobjectionable	–
Temperature(°C)	24.4	Shall not exceed 5 °C above the receiving temperature
Nitrate Nitrogen(mg/L)(As N)	<5.0	10
Ammonical Nitrogen , mg/l (As N)	1.83	50
Total Kjeldhal Nitrogen, mg/l (As N)	3.77	100
BOD [3 days at 27oC] (mg/L)	3.2	30
Arsenic, mg/l	<0.005	0.2
Lead, mg/l	<0.005	0.1
Hexavalent Chromium(mg/L)	<0.05	0.1
Total Chromium(mg/L)	<0.01	2
Copper(mg/L)	<0.03	3
Zinc(mg/L)	0.94	5
Cadmium, mg/l	<0.001	2
Nickel(mg/L)	1.01	3
Fluoride(mg/L)	0.38	2
Manganese(mg/L)	9.37	2
Iron(mg/L)	<0.10	3
Disolved Phosphate(mg/L)	<1.0	5

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:121

Project (OCP / UG)	Lakhanpur OCP	Belpahar OCP	MoEF-Sch-VI Standards
<b>NAME OF THE STATION</b>	<b>Mine Sump Water</b>	<b>Mine Sump Water</b>	
<b>Date</b>	<b>13-Nov-19</b>	<b>13-Nov-19</b>	
<b>Colour(Hazen)</b>	2	5	–
<b>Odour</b>	Unobjectionable	Unobjectionable	–
<b>Temperature(°C)</b>	24.3	24.2	<b>Shall not exceed 5 °C above the receiving temperature</b>
<b>Nitrate Nitrogen(mg/L)(As N)</b>	<5.0	<5.0	<b>10</b>
<b>Ammonical Nitrogen , mg/l (As N)</b>	<0.50	<0.50	<b>50</b>
<b>Total Kjeldhal Nitrogen, mg/l (As N)</b>	<1.0	<1.0	<b>100</b>
<b>BOD [3 days at 27oC] (mg/L)</b>	3.4	2.5	<b>30</b>
<b>Arsenic, mg/l</b>	<0.005	<0.005	<b>0.2</b>
<b>Lead, mg/l</b>	<0.005	<0.005	<b>0.1</b>
<b>Hexavalent Chromium(mg/L)</b>	<0.05	<0.05	<b>0.1</b>
<b>Total Chromium(mg/L)</b>	<0.01	<0.01	<b>2</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	<b>3</b>
<b>Zinc(mg/L)</b>	0.05	<0.04	<b>5</b>
<b>Cadmium, mg/l</b>	<0.001	<0.001	<b>2</b>
<b>Nickel(mg/L)</b>	0.14	<0.10	<b>3</b>
<b>Fluoride(mg/L)</b>	0.49	0.47	<b>2</b>
<b>Manganese(mg/L)</b>	3.76	0.95	<b>2</b>
<b>Iron(mg/L)</b>	<0.10	<0.10	<b>3</b>
<b>Disolved Phosphate(mg/L)</b>	<1.0	<1.0	<b>5</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:122

Project (OCP / UG)	Kulda OCP		MoEF-Sch-VI Standards
	EQ1-Mine Sump Water	EQ2-Final Discharge Point of Mine	
<b>NAME OF THE STATION</b>			
<b>Date</b>	<b>13-Nov-19</b>	<b>13-Nov-19</b>	
<b>Colour(Hazen)</b>	3	4	–
<b>Odour</b>	Unobjectionable	Unobjectionable	–
<b>Temperature(°C)</b>	24.7	24.6	<b>Shall not exceed 5 °C above the receiving temperature</b>
<b>Nitrate Nitrogen(mg/L)(As N)</b>	<5.0	<5.0	<b>10</b>
<b>Ammonical Nitrogen , mg/l (As N)</b>	0.61	2.39	<b>50</b>
<b>Total Kjeldhal Nitrogen, mg/l (As N)</b>	1.44	4.55	<b>100</b>
<b>BOD [3 days at 27oC] (mg/L)</b>	3.6	3.2	<b>30</b>
<b>Arsenic, mg/l</b>	<0.005	<0.005	<b>0.2</b>
<b>Lead, mg/l</b>	<0.005	<0.005	<b>0.1</b>
<b>Hexavalent Chromium(mg/L)</b>	<0.05	<0.05	<b>0.1</b>
<b>Total Chromium(mg/L)</b>	<0.01	<0.01	<b>2</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	<b>3</b>
<b>Zinc(mg/L)</b>	<0.04	<0.04	<b>5</b>
<b>Cadmium, mg/l</b>	<0.001	<0.001	<b>2</b>
<b>Nickel(mg/L)</b>	<0.10	<0.10	<b>3</b>
<b>Fluoride(mg/L)</b>	0.37	<0.30	<b>2</b>
<b>Manganese(mg/L)</b>	<0.04	0.06	<b>2</b>
<b>Iron(mg/L)</b>	<0.10	<0.10	<b>3</b>
<b>Disolved Phosphate(mg/L)</b>	<1.0	<1.0	<b>5</b>

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:123

Project (OCP / UG)		Orient UG		MoEF-Sch-VI Standards
NAME OF THE STATION	Mine Sump. of Mine No.2	Mine Sump. of Mine No.3		
Date	12-Nov-19	12-Nov-19		
Colour(Hazen)	2	3		–
Odour	Unobjectionable	Unobjectionable		–
Temperature(°C)	24.2	24.3		Shall not exceed 5 °C above the receiving temperature
Nitrate Nitrogen(mg/L)(As N)	<5.0	<5.0		10
Ammonical Nitrogen , mg/l (As N)	1.85	1.77		50
Total Kjeldhal Nitrogen, mg/l (As N)	3.10	4.88		100
BOD [3 days at 27oC] (mg/L)	2.9	2.2		30
Arsenic, mg/l	<0.005	<0.005		0.2
Lead, mg/l	<0.005	<0.005		0.1
Hexavalent Chromium(mg/L)	<0.05	<0.05		0.1
Total Chromium(mg/L)	<0.01	<0.01		2
Copper(mg/L)	<0.03	<0.03		3
Zinc(mg/L)	<0.04	<0.04		5
Cadmium, mg/l	<0.001	<0.001		2
Nickel(mg/L)	<0.10	<0.10		3
Fluoride(mg/L)	0.48	0.30		2
Manganese(mg/L)	<0.04	<0.04		2
Iron(mg/L)	<0.10	<0.10		3
Disolved Phosphate(mg/L)	<1.0	<1.0		5

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:124

Project (OCP / UG) NAME OF THE STATION	Orient UG		MoEF-Sch-VI Standards
	Mine Sump. of Mine no.4	Mine Sump. of HBM	
Date	12-Nov-19	13-Nov-19	
Colour(Hazen)	2	3	–
Odour	Unobjectionable	Unobjectionable	–
Temperature(°C)	24.8	24.6	Shall not exceed 5 °C above the receiving temperature
Nitrate Nitrogen(mg/L)(As N)	<5.0	<5.0	10
Ammonical Nitrogen , mg/l (As N)	0.65	<0.50	50
Total Kjeldhal Nitrogen, mg/l (As N)	1.11	<1.0	100
BOD [3 days at 27oC] (mg/L)	2.8	2.4	30
Arsenic, mg/l	<0.005	<0.005	0.2
Lead, mg/l	<0.005	<0.005	0.1
Hexavalent Chromium(mg/L)	<0.05	<0.05	0.1
Total Chromium(mg/L)	<0.01	<0.01	2
Copper(mg/L)	<0.03	<0.03	3
Zinc(mg/L)	<0.04	<0.04	5
Cadmium, mg/l	<0.001	<0.001	2
Nickel(mg/L)	<0.10	<0.1	3
Fluoride(mg/L)	0.35	0.51	2
Manganese(mg/L)	<0.04	<0.04	2
Iron(mg/L)	<0.10	<0.10	3
Disolved Phosphate(mg/L)	<1.0	<1.0	5

# **SURFACE WATER QUALITY MONITORING**



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## 7. SURFACE WATER QUALITY DATA

Table: 125

Area: Ib valley

Project: Samaleswari OCP

Monitoring Station: Pandren Nallah Near Muchabahal

Date of sampling	29/Jun/2019	11/Sep/19	13/Dec/19	24/Mar/20	STANDARD
pH		6.77			6.5-8.5
Dissolved Oxygen(mg/L)		5.2			4
BOD (3 days 27°c)(mg/L)		3.0			3
Color (Hazen unit)		4			300
Total dissolved solids (mg/L)		126			1500
Total Suspended Solids(mg/L)		31			-
Total Hardness(mg/L)		52			-
Copper(mg/L)	DRY	<0.03	DRY	DRY	1.5
Iron(mg/L)		0.13			50
Chlorides(mg/L)		10			600
Sulphate(mg/L)		8			400
Nitrate( mg/L)		<0.5			50
Fluoride (mg/L)		0.39			1.5
Cadmium(mg/L)		<0.001			0.01
Arsenic(mg/L)		<0.005			0.2
Lead(mg/L)		<0.005			0.1
Zinc(mg/L)		0.11			15
Hexavalent Chromium(mg/L)		<0.01			0.05
Oil & Grease (mg/L)		<4.0			0.1

IS:2296-1982 Tolerance for inland Surface water (Class C)

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table126

Area: Ib valley

Project: Samaleswari OCP

Monitoring Station: Pandren Nallah Before Confluence Point with Lilari Nallah

Date of sampling	29/Jun/2019	11/Sep/19	13/Dec/19	24/Mar/20	STANDARD
<b>pH</b>	7.06	7.49	6.76	6.45	<b>6.5-8.5</b>
<b>Dissolved Oxygen(mg/L)</b>	6.3	4.6	7.2	6.5	<b>4</b>
<b>BOD (3 days 27oc(mg/L)</b>	2.4	2.6	2.0	2.2	<b>3</b>
<b>Color (Hazen unit)</b>	9	2	2	3	<b>300</b>
<b>Total dissolved solids (mg/L)</b>	202	298	112	132	<b>1500</b>
<b>TSS(mg/L)</b>	83	48	22	26	<b>-</b>
<b>Total Hardness(mg/L)</b>	48	108	36.6	32	<b>-</b>
<b>Copper(mg/L)</b>	<0.03	0.03	<0.03	<0.03	<b>1.5</b>
<b>Iron(mg/L)</b>	0.11	<0.1	<0.1	<0.1	<b>50</b>
<b>Chlorides(mg/L)</b>	10	26	6	8	<b>600</b>
<b>Sulphate(mg/L)</b>	23.58	32	5.37	6.20	<b>400</b>
<b>Nitrate(mg/L)</b>	<0.5	23.0	<0.5	<0.5	<b>50</b>
<b>Fluoride(mg/L)</b>	<0.3	<0.3	0.45	0.41	<b>1.5</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<b>0.01</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.2</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.1</b>
<b>Zinc(mg/L)</b>	0.09	0.09	<0.04	<0.04	<b>15</b>
<b>Chromium(as Cr6) (mg/L)</b>	<0.01	<0.01	<0.05	<0.05	<b>0.05</b>
<b>Oil &amp; Grease (mg/L)</b>	<4.0	<4.0	<4.0	<4.0	<b>0.1</b>

IS:2296-1982 Tolerance for inland Surface water (Class C)

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table127

**Area:** Lakhanpur

**Project:** Lakhanpur OCP

**Monitoring Station:** Pulijhor Stream Near Tingismal Village as u/s for Lakhanpur OCP

Date of Sampling	30/Aug/2019	24/Mar/2020	STANDARD
pH	7.02	7.02	6.5-8.5
Dissolved Oxygen(mg/L)	6.90	6.90	4
BOD (3 days 27oc(mg/L)	2.10	2.10	3
Color (Hazen unit)	6	6	300
Total dissolved solids (mg/L)	174	174	1500
TSS(mg/L)	40	40	-
Total Hardness(mg/L)	88	88	-
Copper(mg/L)	<0.03	<0.03	1.5
Iron(mg/L)	0.32	0.32	50
Chlorides(mg/L)	10	10	600
Sulphate(mg/L)	12	12	400
Nitrate(mg/L)	<0.5	<0.5	50
Fluoride(mg/L)	<0.30	<0.30	1.5
Cadmium(mg/L)	<0.001	<0.001	0.01
Arsenic(mg/L)	<0.005	<0.005	0.2
Lead(mg/L)	<0.005	<0.005	0.1
Zinc(mg/L)	<0.04	<0.04	15
Chromium(as Cr6) (mg/L)	<0.01	<0.01	0.05
Oil & Grease (mg/L)	<4.0	<4.0	0.1

IS:2296-1982 Tolerance for inland Surface water (Class C)

Table128

**Area:** Lakhanpur**Project:** Lakhanpur OCP**Monitoring Station:** Pulijhor stream Near Darlipalil Village before Confluence to Lilari Nallah as d/s Water of Lakhanpur OCP

Date of Sampling	24/Mar/2020	STANDARD
pH	7.52	6.5-8.5
Dissolved Oxygen(mg/L)	6.20	4
BOD (3 days 27oc)(mg/L)	2.70	3
Color (Hazen unit)	9	300
Total dissolved solids (mg/L)	186	1500
TSS(mg/L)	48	-
Total Hardness(mg/L)	92	-
Copper(mg/L)	<0.03	1.5
Iron(mg/L)	0.34	50
Chlorides(mg/L)	12	600
Sulphate(mg/L)	14	400
Nitrate(mg/L)	<0.5	50
Fluoride(mg/L)	<0.30	1.5
Cadmium(mg/L)	<0.001	0.01
Arsenic(mg/L)	<0.005	0.2
Lead(mg/L)	<0.005	0.1
Zinc(mg/L)	<0.04	15
Chromium(as Cr6)(mg/L)	<0.01	0.05
Oil & Grease (mg/L)	<4.0	0.1

IS:2296-1982 Tolerance for inland Surface water (Class C)

Table129

Area : Lakhanpur

Project:Lakhanpur OCP

Monitoring Station: Lilari Nallah Near Kudaloi Village as u/s of Lakhanpur OCP

Date of Sampling	24/Mar/2020	STANDARD
pH	7.27	6.5-8.5
Dissolved Oxygen(mg/L)	6.70	4
BOD (3 days 27oc)(mg/L)	2.30	3
Color (Hazen unit)	8	300
Total dissolved solids (mg/L)	182	1500
TSS(mg/L)	46	-
Total Hardness(mg/L)	88	-
Copper(mg/L)	<0.03	1.5
Iron(mg/L)	0.36	50
Chlorides(mg/L)	14	600
Sulphate(mg/L)	10	400
Nitrate(mg/L)	<0.5	50
Fluoride(mg/L)	<0.30	1.5
Cadmium(mg/L)	<0.001	0.01
Arsenic(mg/L)	<0.005	0.2
Lead(mg/L)	<0.005	0.1
Zinc(mg/L)	<0.04	15
Chromium(as Cr6)(mg/L)	<0.01	0.05
Oil & Grease (mg/L)	<4.0	0.1

IS:2296-1982 Tolerance for inland Surface water (Class C)

Table130

**Area:** Lakhanpur**Project:** Lakhanpur OCP**Monitoring Station:** Lilari Nallah Near Project Office Lilari Bridge Village as d/s of Lakhanpur OCP

Date of Sampling	24/Mar/2020	STANDARD
pH	7.52	6.5-8.5
Dissolved Oxygen(mg/L)	6.20	4
BOD (3 days 27oc)(mg/L)	2.80	3
Color (Hazen unit)	7	300
Total dissolved solids (mg/L)	194	1500
TSS(mg/L)	52	-
Total Hardness(mg/L)	92	-
Copper(mg/L)	<0.03	1.5
Iron(mg/L)	0.38	50
Chlorides(mg/L)	10	600
Sulphate(mg/L)	9	400
Nitrate(mg/L)	<0.5	50
Fluoride(mg/L)	0.39	1.5
Cadmium(mg/L)	<0.001	0.01
Arsenic(mg/L)	<0.005	0.2
Lead(mg/L)	<0.005	0.1
Zinc(mg/L)	<0.04	15
Chromium(as Cr6)(mg/L)	<0.01	0.05
Oil & Grease (mg/L)	<4.0	0.1

IS:2296-1982 Tolerance for inland Surface water (Class C)

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table131

**Area:** Basundhara-Garjanbahal

**Project:** Kulda OCP

**Monitoring Station:** Basundhara River near Kusara Village as d/s Water of Kulda OCP

Date of Sampling	27/Aug/2019	21/Mar/2020	STANDARD
pH	7.33	7.27	6.5-8.5
Dissolved Oxygen(mg/L)	6.40	6.20	4
BOD (3 days 27oc)(mg/L)	<2.0	<2.0	3
Color (Hazen unit)	4	3	300
Total dissolved solids (mg/L)	114	132	1500
TSS(mg/L)	63	58	-
Total Hardness(mg/L)	64	60	-
Copper(mg/L)	<0.03	<0.03	1.5
Iron(mg/L)	0.43	0.41	50
Chlorides(mg/L)	8	10	600
Sulphate(mg/L)	10	9	400
Nitrate(mg/L)	<0.5	<0.5	50
Fluoride(mg/L)	<0.30	<0.30	1.5
Cadmium(mg/L)	<0.001	<0.001	0.01
Arsenic(mg/L)	<0.005	<0.005	0.2
Lead(mg/L)	<0.005	<0.005	0.1
Zinc(mg/L)	0.06	0.06	15
Chromium(as Cr6)(mg/L)	<0.01	<0.01	0.05
Oil & Grease(mg/L)	<4.0	<4.0	0.1

IS:2296-1982 Tolerance for inland Surface water (Class C)

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table132

Area : Basundhara-Garjanbahal

Project: Kulda OCP

Monitoring Station: Basundhara river near Kulaparha Village just after meeting point of Basundhara and chhaturdhara River as u/s of Kulda OCP

Date of Sampling	27/Aug/19	21/Mar/20	STANDARD
pH	6.96	6.81	6.5-8.5
Dissolved Oxygen(mg/L)	5.90	5.70	4
BOD (3 days 27oc(mg/L)	2.90	2.60	3
Color (Hazen unit)	5	3	300
Total dissolved solids (mg/L)	118	139	1500
TSS(mg/L)	34	32	-
Total Hardness(mg/L)	64	56	-
Copper(mg/L)	<0.03	<0.03	1.5
Iron(mg/L)	0.39	0.35	50
Chlorides(mg/L)	6	8	600
Sulphate(mg/L)	12	10	400
Nitrate(mg/L)	<0.5	<0.5	50
Fluoride(mg/L)	<0.30	<0.30	1.5
Cadmium(mg/L)	<0.001	<0.001	0.01
Arsenic(mg/L)	<0.005	<0.005	0.2
Lead(mg/L)	<0.005	<0.005	0.1
Zinc(mg/L)	<0.04	<0.04	15
Chromium(as Cr6) (mg/L)	<0.01	<0.01	0.05
Oil & Grease (mg/L)	<4.0	<4.0	0.1

IS:2296-1982 Tolerance for inland Surface water (Class C)



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table133

**Area:** Basundhara-Garjanbahal

**Project:** Kulda OCP

**Monitoring Station:** Basundhara River near Tiklipara Village as d/s of Kulda OCP

Date of Sampling	27/Aug/19	21/Mar/20	STANDARD
pH	7.10	6.69	6.5-8.5
Dissolved Oxygen(mg/L)	6.10	5.9	4
BOD (3 days 27oc(mg/L)	2.50	2.40	3
Color (Hazen unit)	6	5	300
Total dissolved solids (mg/L)	148	156	1500
TSS(mg/L)	42	38	-
Total Hardness(mg/L)	76	80	-
Copper(mg/L)	<0.03	<0.03	1.5
Iron(mg/L)	0.29	0.29	50
Chlorides(mg/L)	8	10	600
Sulphate(mg/L)	9	11	400
Nitrate(mg/L)	<0.5	<0.5	50
Fluoride(mg/L)	<0.30	<0.30	1.5
Cadmium(mg/L)	<0.001	<0.001	0.01
Arsenic(mg/L)	<0.005	<0.005	0.2
Lead(mg/L)	<0.005	<0.005	0.1
Zinc(mg/L)	<0.04	<0.04	15
Chromium(as Cr6)(mg/L)	<0.01	<0.01	0.05
Oil & Grease(mg/L)	<4.0	<4.0	0.1

IS:2296-1982 Tolerance for inland Surface water (Class C)

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table134

**Area:** Basundhara-Garjanbahal

**Project:** Garjanbahal OCP

**Monitoring Station:** Basundhara River near Bankibahal Bridge as u/s water of Garjanbahal OCP

Date of sampling	11/Sep/19	21/Mar/20	STANDARD
pH	7.09	6.84	6.5-8.5
Dissolved Oxygen(mg/L)	4.2	4.0	4
BOD (3 days 27oc)(mg/L)	3.2	3.0	3
Color (Hazen unit)	3	2	300
Total dissolved solids (mg/L)	98	114	1500
TSS(mg/L)	24	20	-
Total Hardness(mg/L)	32	28	-
Copper(mg/L)	0.03	0.03	1.5
Iron(mg/L)	<0.1	<0.1	50
Chlorides(mg/L)	8	10	600
Sulphate(mg/L)	6	8	400
Nitrate(mg/L)	<0.5	<0.5	50
Fluoride(mg/L)	<0.3	<0.3	1.5
Cadmium(mg/L)	<0.001	<0.001	0.01
Arsenic(mg/L)	<0.005	<0.005	0.2
Lead(mg/L)	<0.005	<0.005	0.1
Zinc(mg/L)	<0.04	<0.04	15
Chromium(as Cr6)(mg/L)	<0.01	<0.01	0.05
Oil & Grease(mg/L)	<4.0	<4.0	0.1

IS:2296-1982 Tolerance for inland Surface water (Class C)

Table:135

**Area:** Basundhara-Garjanbahal**Project:** Garjanbahal OCP**Monitoring Station:** Basundhara River near Barpali Village as u/s of Garjanbahal OCP

Date of sampling	11/Sep/19	21/Mar/20	STANDARD
<b>pH</b>	7.05	6.98	<b>6.5-8.5</b>
<b>Dissolved Oxygen(mg/L)</b>	3.8	4.0	<b>4</b>
<b>BOD (3 days 27oc)(mg/L)</b>	2.3	2.1	<b>3</b>
<b>Color (Hazen unit)</b>	2	3	<b>300</b>
<b>Total dissolved solids (mg/L)</b>	108	126	<b>1500</b>
<b>TSS(mg/L)</b>	28	26	-
<b>Total Hardness(mg/L)</b>	36	40	-
<b>Copper(mg/L)</b>	0.03	0.03	<b>1.5</b>
<b>Iron(mg/L)</b>	<0.1	<0.1	<b>50</b>
<b>Chlorides(mg/L)</b>	6	8	<b>600</b>
<b>Sulphate(mg/L)</b>	8	10	<b>400</b>
<b>Nitrate(mg/L)</b>	<0.5	<0.5	<b>50</b>
<b>Fluoride(mg/L)</b>	0.3	0.34	<b>1.5</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<b>0.01</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<b>0.2</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<b>0.1</b>
<b>Zinc(mg/L)</b>	<0.04	<0.04	<b>15</b>
<b>Chromium(as Cr6)(mg/L)</b>	<0.01	<0.01	<b>0.05</b>
<b>Oil &amp; Grease(mg/L)</b>	<4.0	<4.0	<b>0.1</b>

IS:2296-1982 Tolerance for inland Surface water (Class C)

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:136

Area : Orient

Project: Orient

Monitoring Station: Bhedan River Before Confluence Point with IB River

Date of sampling	28/Jun/2019	11/Sep/19	13/Dec/19	23/Mar/20	STANDARD
pH	7.58	7.16	7.21	7.06	6.5-8.5
Dissolved Oxygen(mg/L)	6.7	5.4	5.8	5.2	4
BOD (3 days 27°c(mg/L)	3.3	3.4	2.4	2.6	3
Color (Hazen unit)	18	1	1	2	300
Total dissolved solids (mg/L)	234	194	128	142	1500
Total Suspended Solids(mg/L)	112	68	18	24	-
Total Hardness(mg/L)	44	80	56.9	60	-
Copper(mg/L)	<0.03	0.03	<0.03	<0.03	1.5
Iron(mg/L)	0.26	<0.1	<0.1	<0.1	50
Chlorides(mg/L)	10	10	6	10	600
Sulphate(mg/L)	24.28	14	7.31	8.5	400
Nitrate( mg/L)	<0.5	<0.5	<0.5		50
Fluoride (mg/L)	<0.30	1.13	0.39	0.35	1.5
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.01
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.2
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.1
Zinc(mg/L)	<0.04	<0.04	<0.04	<0.04	15
Hexavalent Chromium(mg/L)	<0.01	<0.01	<0.05	<0.05	0.05
Oil & Grease	<4.0	<4.0	<4.0	<4.0	0.1

IS:2296-1982 Tolerance for inland Surface water (Class C)

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:137

**Area:** Orient

**Project:** Orient Mine No 2

**Monitoring Station:** Pond Water at Burhijam Village

Date of sampling	28/Jun/2019	11/Sep/19	13/Dec/19	24/Mar/20	STANDARD
<b>pH</b>	7.42	7.21	6.94	6.80	<b>6.5-8.5</b>
<b>Dissolved Oxygen(mg/L)</b>	4.8	5.2	4.5	4.8	<b>4</b>
<b>BOD (3 days 27°c(mg/L)</b>	3.8	2.9	2.1	2.2	<b>3</b>
<b>Color (Hazen unit)</b>	9	4	3	4	<b>300</b>
<b>Total disolved solids (mg/L)</b>	290	138	138	148	<b>1500</b>
<b>Total Suspended Solids(mg/L)</b>	63	54	26	30	<b>-</b>
<b>Total Hardness(mg/L)</b>	96	48	56.9	64	<b>-</b>
<b>Copper(mg/L)</b>	<0.03	0.03	<0.03	<0.03	<b>1.5</b>
<b>Iron(mg/L)</b>	<0.1	0.10	<0.1	<0.1	<b>50</b>
<b>Chlorides(mg/L)</b>	52	8	18	22	<b>600</b>
<b>Sulphate(mg/L)</b>	32.75	10	19.4	20.6	<b>400</b>
<b>Nitrate( mg/L)</b>	<0.5	<0.5	1.99	1.86	<b>50</b>
<b>Fluoride (mg/L)</b>	<0.30	0.78	0.42	0.39	<b>1.5</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<b>0.01</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.2</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.1</b>
<b>Zinc(mg/L)</b>	<0.04	<0.04	<0.04	<0.04	<b>15</b>
<b>Hexavalent Chromium(mg/L)</b>	<0.1	<0.01	<0.05	<0.05	<b>0.05</b>
<b>Oil &amp; Grease</b>	<4.0	<4.0	<4.0	<4.0	<b>0.1</b>

IS:2296-1982 Tolerance for inland Surface water (Class C)

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:138

**Area:** Orient

**Project:** Orient Mine no. 5

**Monitoring Station:** Basundhara River Near Degan Village Before Confluence as u/s of Orient Area

Date of sampling	28/Jun/19	11-Sep-19	13-Dec-19	24-Mar-20	STANDARD
pH	7.79	7.89	7.74	7.62	6.5-8.5
Dissolved Oxygen(mg/L)	6.6	4.6	5.3	5.1	4
BOD (3 days 27oc(mg/L)	2.4	3.6	1.6	<2.0	3
Color (Hazen unit)	6	3	3	2	300
Total dissolved solids (mg/L)	228	174	124	138	1500
Total Suspended Solids(mg/L)	57	39	28	24	-
Total Hardness(mg/L)	84	64	56.9	52	-
Copper(mg/L)	<0.03	0.03	<0.03	<0.03	1.5
Iron(mg/L)	<0.10	<0.1	<0.1	<0.1	50
Chlorides(mg/L)	16	10	6	8	600
Sulphate(mg/L)	34.59	12	7.61	9.24	400
Nitrate( mg/L)	<0.5	<0.5	<0.5	<0.5	50
Fluoride (mg/L)	<0.30	0.52	0.35	0.32	1.5
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.01
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.2
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.1
Zinc(mg/L)	<0.04	<0.04	<0.04	<0.04	15
Hexavalent Chromium(mg/L)	<0.01	<0.01	<0.05	<0.05	0.05
Oil & Grease (mg/L)	<4.0	<4.0	<4.0	<4.0	0.1

IS:2296-1982 Tolerance for inland Surface water (Class C)

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:139

**Area:** Orient

**Project:** Orient Mine no. 4

**Monitoring Station:** IB River Near Charbhathi Village as u/s water for Ib Valley Coalfield

Date of sampling	28/Jun/2019	11/Sep/19	13/Dec/19	24/Mar/20	STANDARD
<b>pH</b>	7.71	7.08	7.60	7.51	<b>6.5-8.5</b>
<b>Dissolved Oxygen(mg/L)</b>	6.6	5.8	7.0	6.4	<b>4</b>
<b>BOD (3 days 27°c(mg/L)</b>	2.9	3.1	1.8	<2.0	<b>3</b>
<b>Color (Hazen unit)</b>	7	2	2	3	<b>300</b>
<b>Total dissolved solids (mg/L)</b>	224	114	120	132	<b>1500</b>
<b>Total Suspended Solids(mg/L)</b>	54	34	20	22	<b>-</b>
<b>Total Hardness(mg/L)</b>	80	56	56.9	52	<b>-</b>
<b>Copper(mg/L)</b>	<0.03	0.03	<0.03	<0.03	<b>1.5</b>
<b>Iron(mg/L)</b>	<0.1	0.14	<0.1	<0.1	<b>50</b>
<b>Chlorides(mg/L)</b>	16	8	6	8	<b>600</b>
<b>Sulphate(mg/L)</b>	35.72	7	7.61	8.10	<b>400</b>
<b>Nitrate( mg/L)</b>	<0.5	<0.5	<0.5	<0.5	<b>50</b>
<b>Fluoride (mg/L)</b>	<0.30	0.30	0.37	0.32	<b>1.5</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<b>0.01</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.2</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.1</b>
<b>Zinc(mg/L)</b>	<0.04	<0.04	<0.04	<0.04	<b>15</b>
<b>Hexavalent Chromium(mg/L)</b>	<0.01	<0.01	<0.05	<0.05	<b>0.05</b>
<b>Oil &amp; Grease</b>	<4.0	<4.0	<4.0	<4.0	<b>0.1</b>

IS:2296-1982 Tolerance for inland Surface water (Class C)

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:140

Area : Orient

Project: Orient Mine no. 6

Monitoring Station: Ib River Bridge of NH200 at Gondghora Village as u/s of Orient Area

Date of sampling	28/Jun/2019	11/Sep/19	13/Dec/19	24/Mar/20	STANDARD
pH	7.54	7.26	7.50	7.43	6.5-8.5
Dissolved Oxygen(mg/L)	5.7	5.0	6.3	6.0	4
BOD (3 days 27°c)(mg/L)	3.6	3.2	2.2	2.4	3
Color (Hazen unit)	19	5	2	3	300
Total dissolved solids (mg/L)	236	134	132	140	1500
Total Suspended Solids(mg/L)	109	26	24	20	-
Total Hardness(mg/L)	48	56	44.7	40	-
Copper(mg/L)	<0.03	0.03	<0.03	<0.03	1.5
Iron(mg/L)	0.20	0.17	<0.1	<0.1	50
Chlorides(mg/L)	10	8	14	18	600
Sulphate(mg/L)	22.02	10	11.49	13.20	400
Nitrate( mg/L)	<0.5	<0.5	15.03	14.16	50
Fluoride (mg/L)	<0.30	0.34	0.45	0.41	1.5
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.01
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.2
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.1
Zinc(mg/L)	<0.04	<0.81	<0.04	<0.04	15
Hexavalent Chromium(mg/L)	<0.01	<0.01	<0.05	<0.05	0.05
Oil & Grease	<4.0	<4.0	<4.0	<4.0	0.1

IS:2296-1982 Tolerance for inland Surface water (Class C)



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:141

Area : Orient

Project: Orient Mine no. 7

Monitoring Station: Bagachoppa Jhor Gangapur Village as u/s for Rampur Colliery

Date of sampling	28/Jun/2019	11/Sep/19	13/Dec/19	24/Mar/20	STANDARD
pH	7.44	7.06	7.22	7.10	6.5-8.5
Dissolved Oxygen(mg/L)	5.3	4.8	7.1	6.2	4
BOD (3 days 27°C)(mg/L)	3.9	2.8	1.9	<2.0	3
Color (Hazen unit)	18	6	1	2	300
Total dissolved solids (mg/L)	278	122	96	104	1500
Total Suspended Solids(mg/L)	139	29	32	30	-
Total Hardness(mg/L)	52	44	36.6	32	-
Copper(mg/L)	<0.03	0.03	<0.03	<0.03	1.5
Iron(mg/L)	0.33	0.16	0.11	<0.1	50
Chlorides(mg/L)	12	10	4	6	600
Sulphate(mg/L)	23.29	9	5.97	5.81	400
Nitrate( mg/L)	<0.5	<0.5	<0.5	<0.5	50
Fluoride (mg/L)	<0.30	0.30	0.46	0.41	1.5
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.01
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.2
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.1
Zinc(mg/L)	<0.04	<0.04	<0.04	<0.04	15
Hexavalent Chromium(mg/L)	<0.01	<0.01	<0.05	<0.05	0.05
Oil & Grease	<4.0	<4.0	<4.0	<4.0	0.1

IS:2296-1982 Tolerance for inland Surface water (Class C)

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:142

**Area:** Orient

**Project:** Orient Mine no. HBI Mine

**Monitoring Station:** IB River near Kotarbaga Village at Bridge Point

Date of sampling	28/Jun/2019	11/Sep/19	13/Dec/19	23/Mar/20	STANDARD
<b>pH</b>	7.35	7.30	7.51	7.23	<b>6.5-8.5</b>
<b>Dissolved Oxygen(mg/L)</b>	4.9	4.2	6.1	5.4	<b>4</b>
<b>BOD (3 days 27°C(mg/L)</b>	3.7	2.4	2.1	2.2	<b>3</b>
<b>Color (Hazen unit)</b>	18	3	2	3	<b>300</b>
<b>Total dissolved solids (mg/L)</b>	266	138	118	132	<b>1500</b>
<b>Total Suspended Solids(mg/L)</b>	131	32	20	22	<b>-</b>
<b>Total Hardness(mg/L)</b>	52	52	52.8	52	<b>-</b>
<b>Copper(mg/L)</b>	<0.03	0.03	<0.03	<0.03	<b>1.5</b>
<b>Iron(mg/L)</b>	0.32	0.11	<0.01	<0.1	<b>50</b>
<b>Chlorides(mg/L)</b>	10	8	14	12	<b>600</b>
<b>Sulphate(mg/L)</b>	21.88	8	9.55	9.32	<b>400</b>
<b>Nitrate( mg/L)</b>	<0.5	<0.5	10.73	10.65	<b>50</b>
<b>Fluoride (mg/L)</b>	<0.30	0.62	0.38	0.33	<b>1.5</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<b>0.01</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.2</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.1</b>
<b>Zinc(mg/L)</b>	<0.04	<0.04	<0.04	<0.04	<b>15</b>
<b>Hexavalent Chromium(mg/L)</b>	<0.01	<0.01	<0.05	<0.05	<b>0.05</b>
<b>Oil &amp; Grease</b>	<4.0	<4.0	<4.0	<4.0	<b>0.1</b>

IS:2296-1982 Tolerance for inland Surface water (Class C)



# WELL WATER QUALITY MONITORING

*mpdi*  
*A Mini Ratna Company*

## 8. WELL WATER LEVEL DATA

Table:143

Area: Ib valley

Project: Samaleswari OCP

Monitoring Station: Well of Chingriguda

Date of sampling	Water level (depth from ground level in meters)
30-May-19	3.15
26-Aug-19	2.67
26-Nov-19	2.90
19-Feb-20	1.73

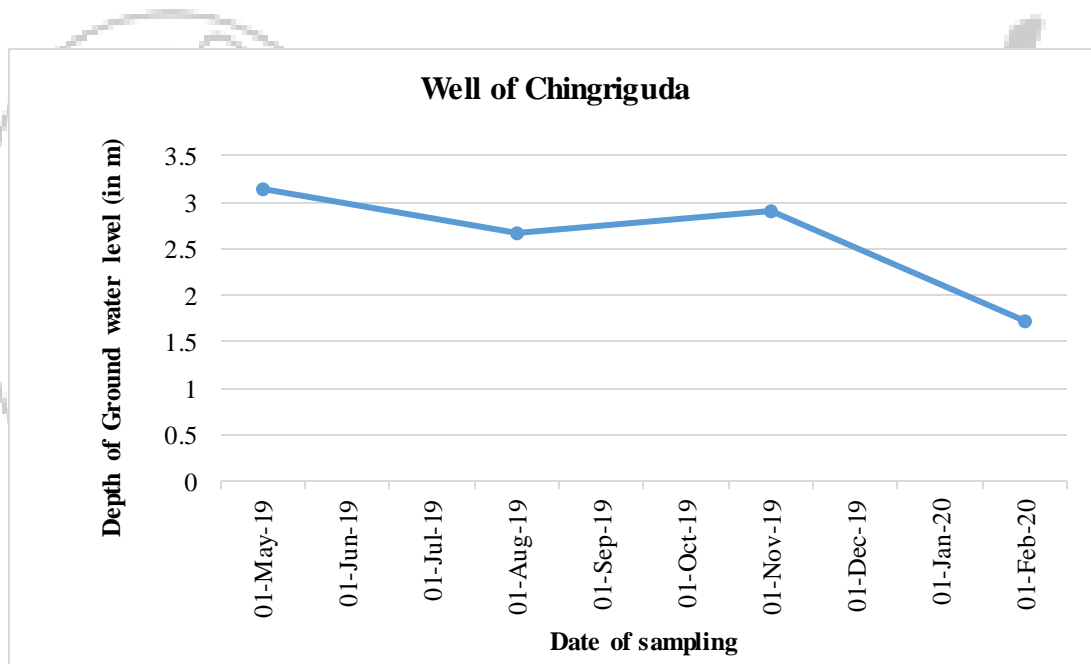
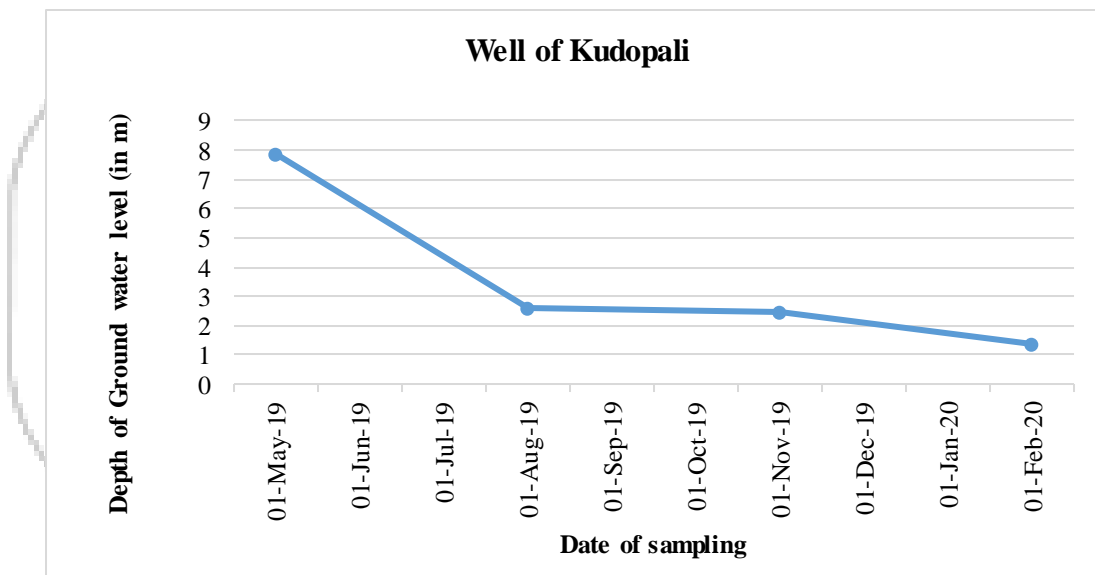


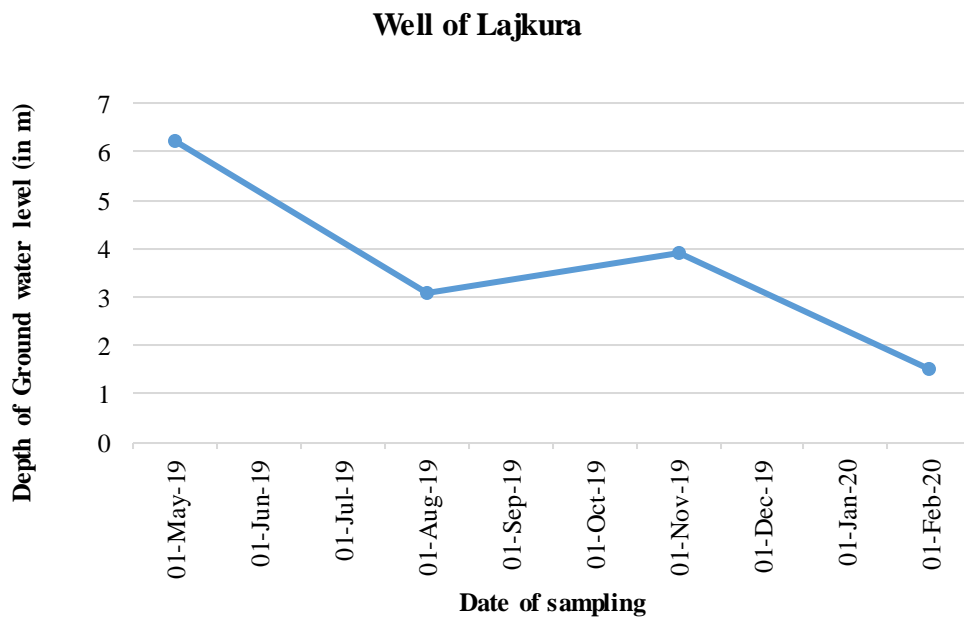
Table:144  
**Area:** Ib valley  
**Project:** Samaleswari OCP  
**Monitoring Station:** Well of Kudopali

Date of sampling	Water level (depth from ground level in meters)
30-May-19	7.85
26-Aug-19	2.57
26-Nov-19	2.46
19-Feb-20	1.35



**Table:145**  
**Area:** Ib valley  
**Project:** Samaleswari OCP  
**Monitoring Station:** Well of Lajkura

Date of sampling	Water level (depth from ground level in meters)
30-May-19	6.22
26-Aug-19	3.10
26-Nov-19	3.89
19-Feb-20	1.52



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:146  
Area: Ib valley  
Project: Samaleswari OCP  
Monitoring Station: Well of Ainlapali

Date of sampling	Water level(depth from ground level in meters)
30-May-19	8.13
26-Aug-19	2.74
26-Nov-19	3.53
19-Feb-20	4.22

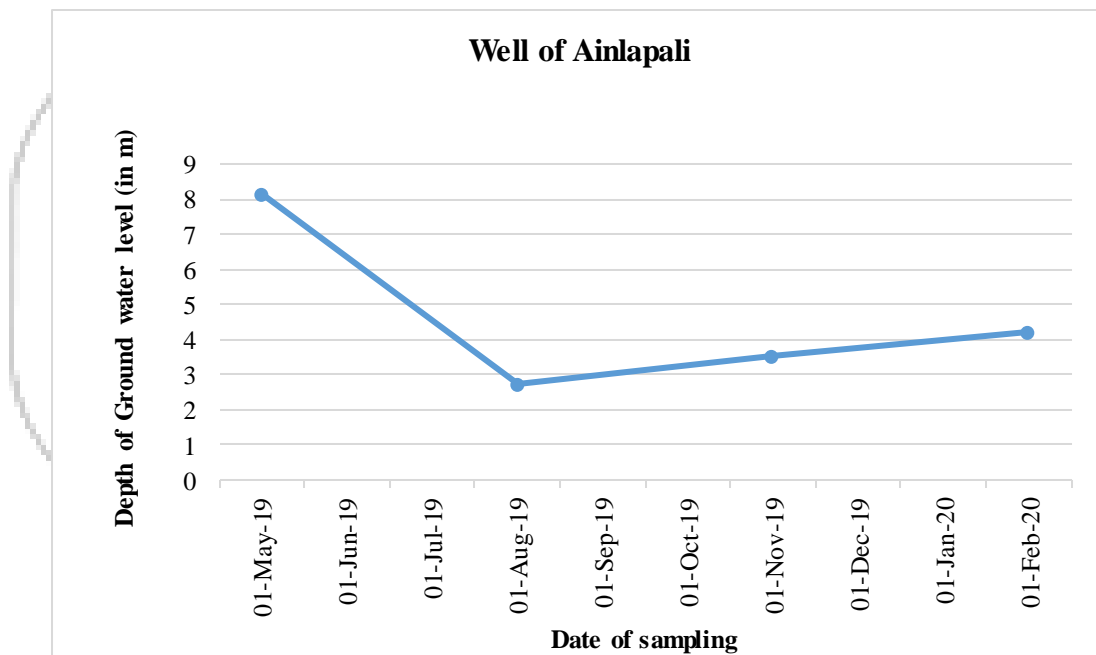
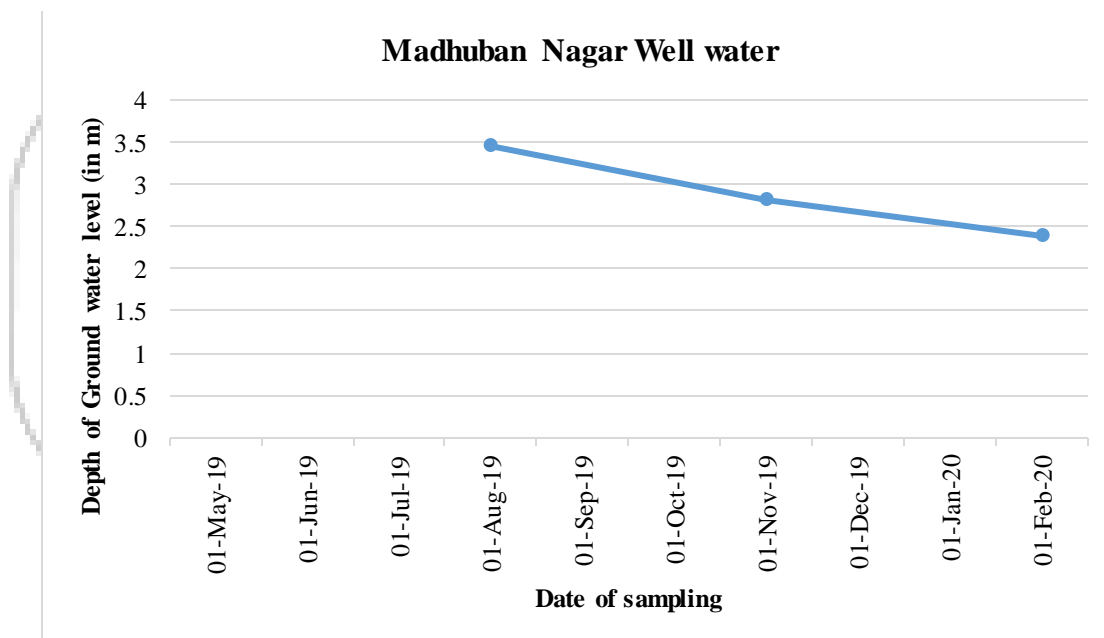


Table:147  
**Area:** Ib valley  
**Project:** LajkuraOCP  
**Monitoring Station:** Madhuban Nagar Well Water

Date of sampling	Water level (depth from ground level in meters)
30-May-19	DRY
22-Aug-19	3.45
21-Nov-19	2.82
19-Feb-20	2.39





ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

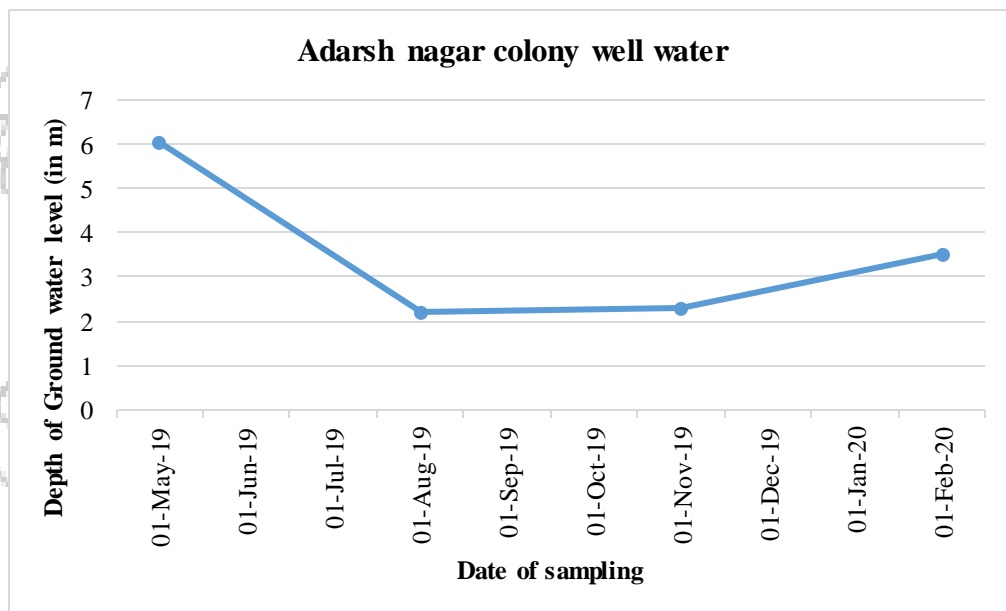
Table:148

Area: Ib valley

Project: Lajkura OCP

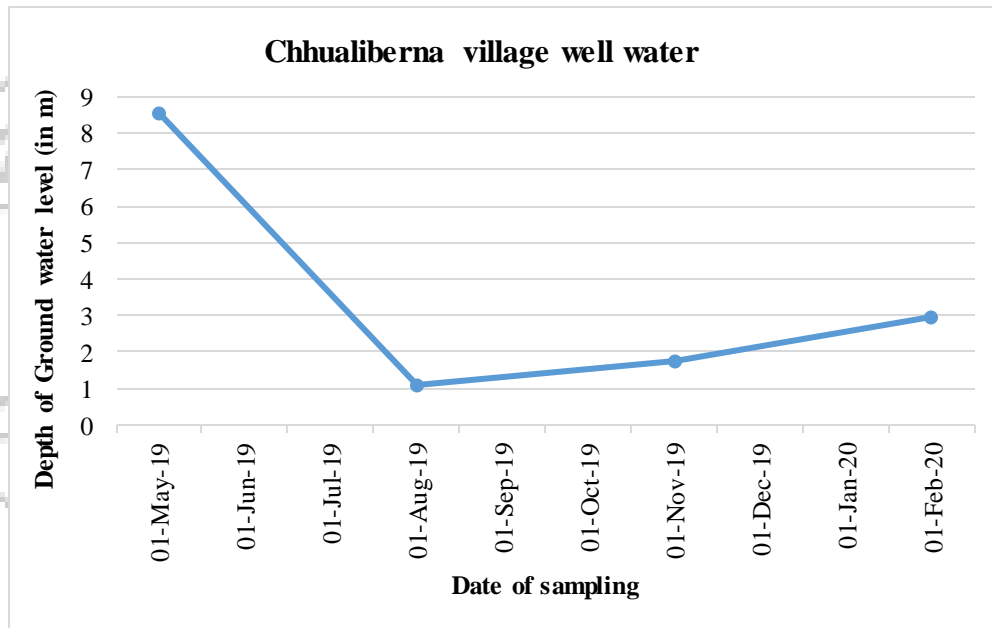
Monitoring Station: Adarsh Nagar Colony Well Water

Date of sampling	Water level (depth from ground level in meters)
30-May-19	6.05
22-Aug-19	2.21
22-Nov-19	2.29
19-Feb-20	3.51



**Table:149**  
**Area:** Ib valley  
**Project:** Lajkura OCP  
**Monitoring Station:** Chhualibera Village Well Water

Date of sampling	Water level(depth from ground level in meters)
30-May-19	8.53
22-Aug-19	1.09
25-Nov-19	1.75
19-Feb-20	2.95



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:150  
Area: Lakhanpur  
Project: Lakhanpur OCP  
Monitoring Station: Ubuda Village Well

Date of sampling	Water level(depth from ground level in meters)
30-May-19	6.78
28-Aug-19	2.03
28-Nov-19	2.51
19-Feb-20	1.52

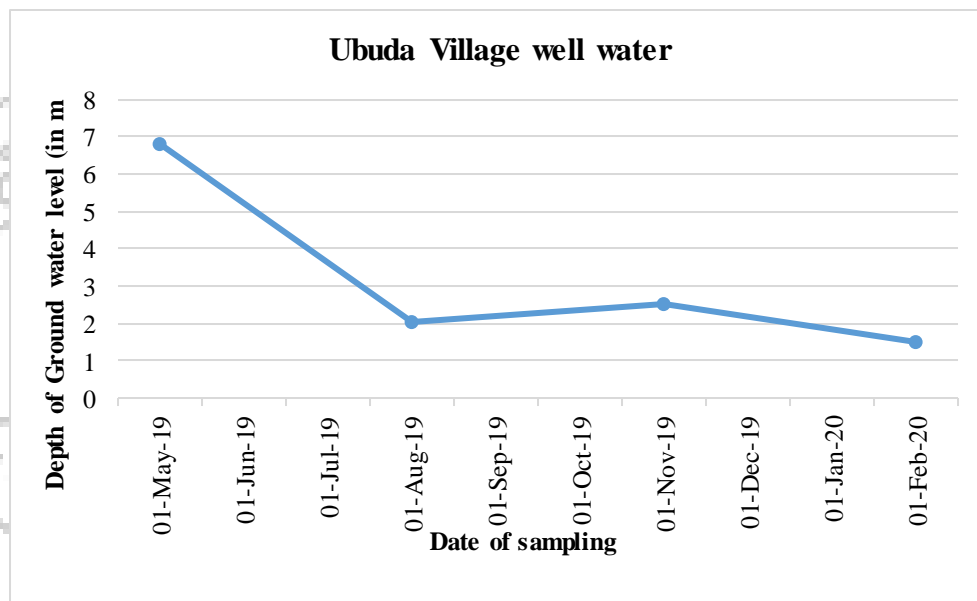


Table:151  
**Area:** Lakhanpur  
**Project:** Lakhanpur OCP  
**Monitoring Station:** Khairkuni Village Well

Date of sampling	Water level(depth from ground level in meters)
30-May-19	7.37
28-Aug-19	2.18
28-Nov-19	2.95
19-Feb-20	1.42

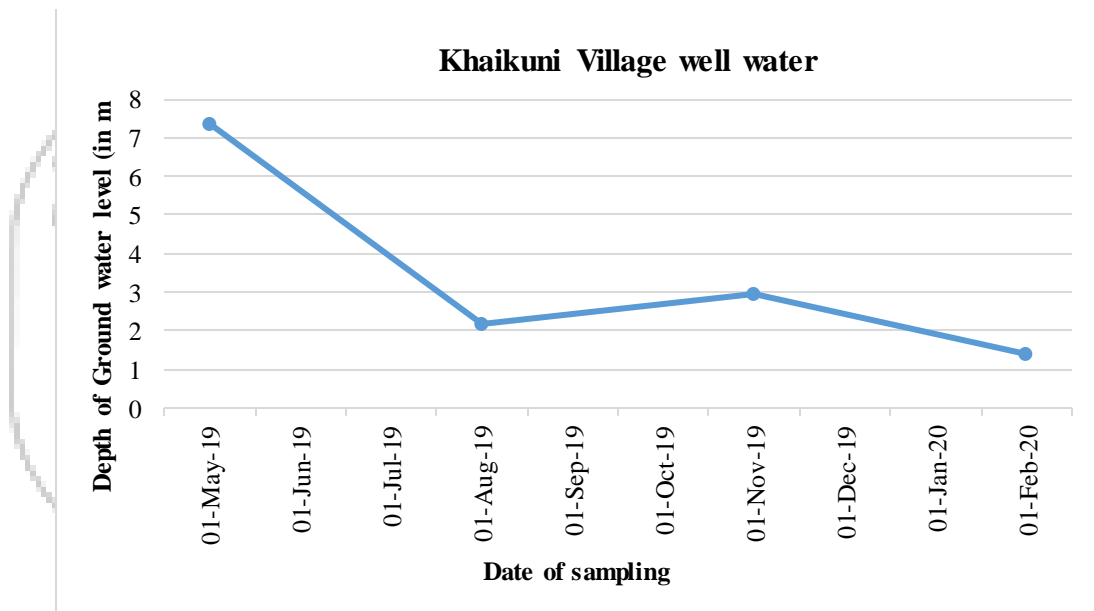


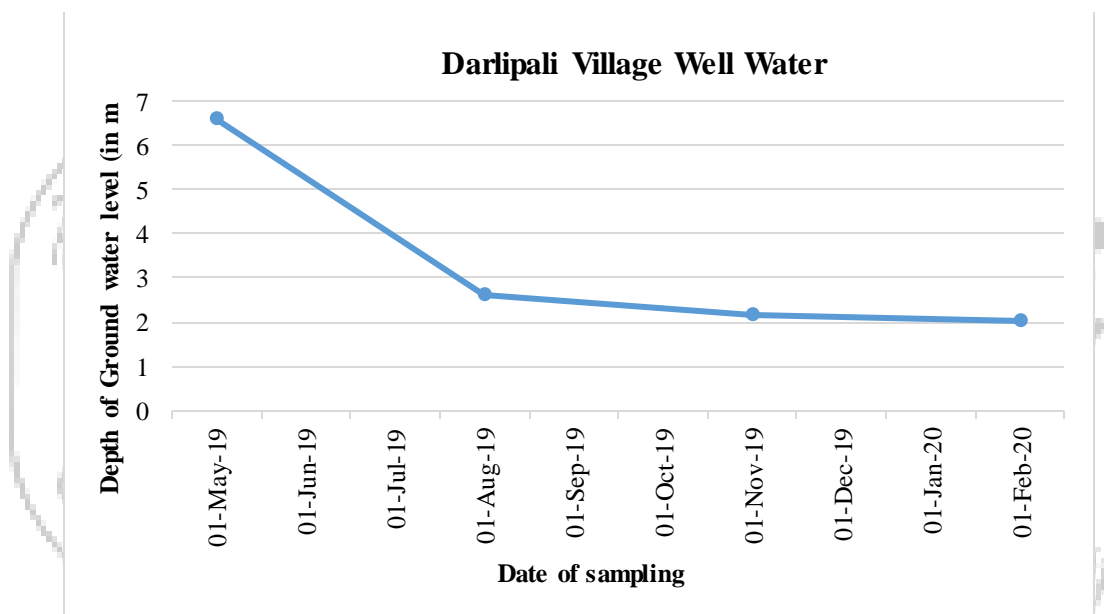
Table:152

**Area:** Lakhanpur

**Project:** Lakhanpur OCP

**Monitoring Station:** Darlipali Village Well Water

Date of sampling	Water level(depth from ground level in meters)
30-May-19	6.60
28-Aug-19	2.59
28-Nov-19	2.18
19-Feb-20	2.03



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:153

Area: Ib valley

Project: Belpahar OCP

Monitoring Station: Chharla Village Well

Date of sampling	Water level (depth from ground level in meters)
19-Feb-20	2.84
28-Nov-19	1.93
28-Aug-19	1.60
30-May-19	6.20

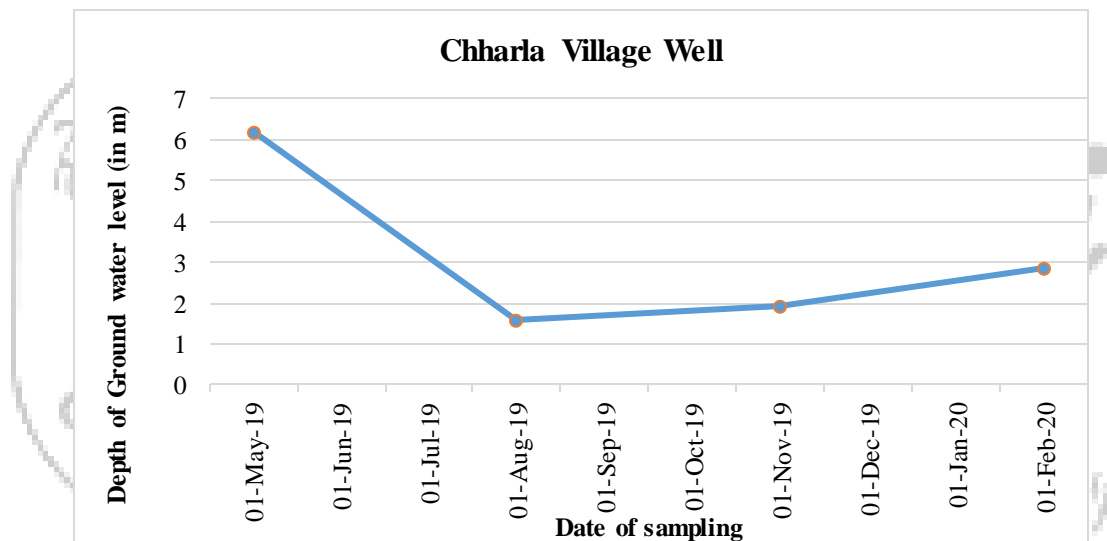
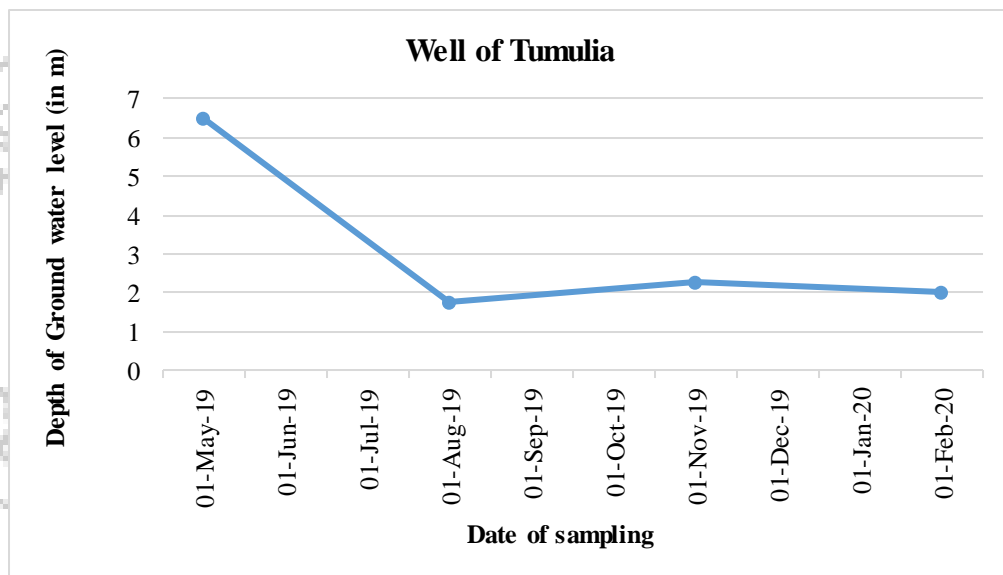


Table:154

**Area:** Basundhara-Garjanbahal  
**Project:** Kulda OCP  
**Monitoring Station:** Well of Tumulia

Date of sampling	Water level(depth from ground level in meters)
20-Feb-20	2.03
18-Nov-19	2.26
16-Aug-19	1.75
29-May-19	6.48

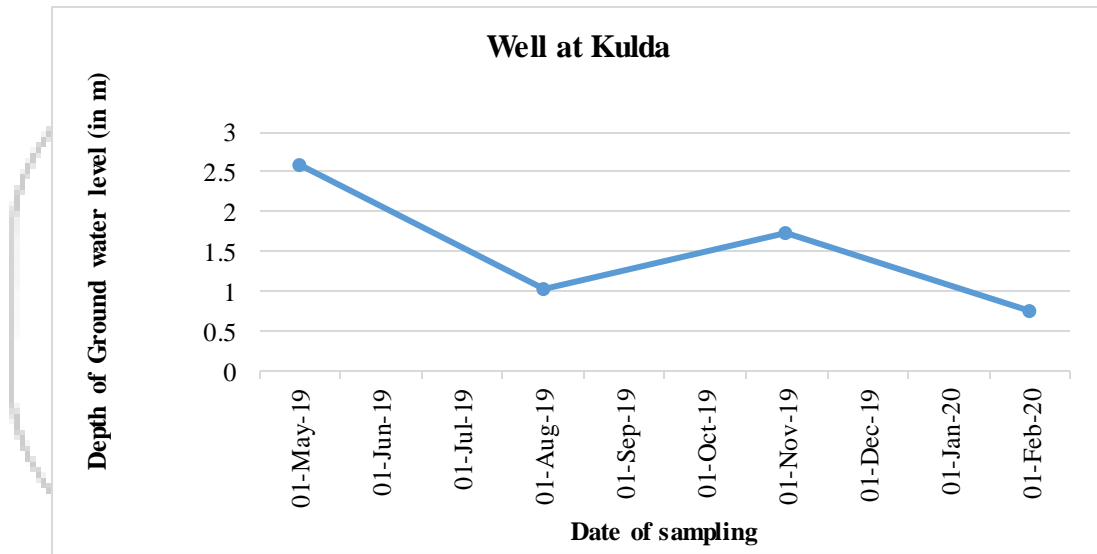


ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:155

**Area:** Basundhara-Garjanbahal  
**Project:** Kulda OCP  
**Monitoring Station:** Well at Kulda

Date of sampling	Water level (depth from ground level in meters)
29-May-19	2.59
16-Aug-19	1.04
18-Nov-19	1.73
20-Feb-20	0.76





ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:156

**Area:** Basundhara-Garjanbahal

**Project:** Garjanbahal OCP

**Monitoring Station:** Well at Garjanbahal Village

Date of sampling	Water level(depth from ground level in meters)
20-Feb-20	2.13
21-Nov-19	DRY
17-Aug-19	2.59
29-May-19	DRY

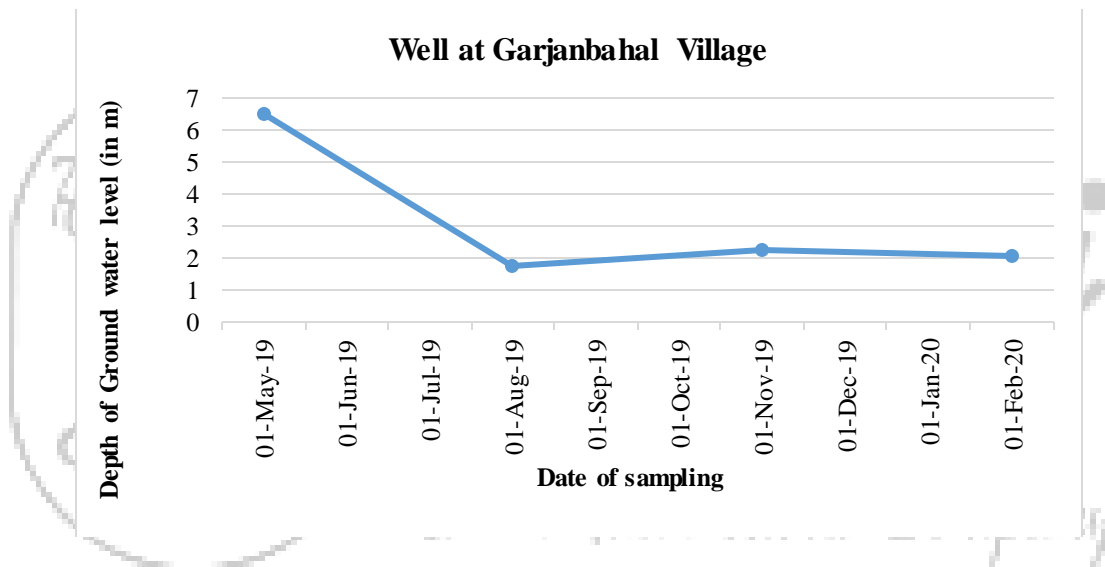


Table:157

**Area:** Basundhara-Garjanbahal

**Project:** Garjanbahal OCP

**Monitoring Station:** Well at Karlikachar Village

Date of sampling	Water level (depth from ground level in meters)
25-Jan-20	10.5
21-Nov-19	1.91
17-Aug-19	2.16
29-May-19	DRY

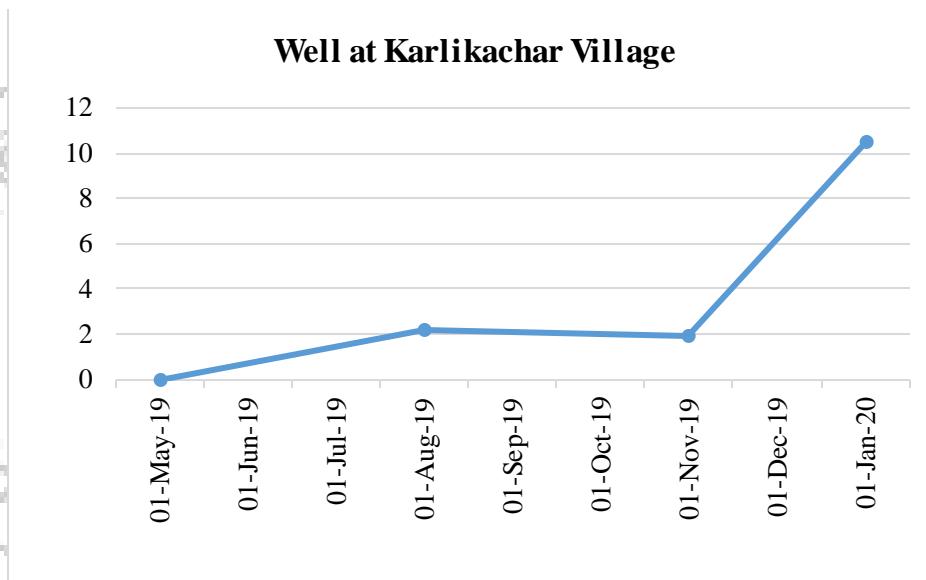


Table:158

**Area:** Basundhara-Garjanbahal  
**Project:** Basundhara OCP  
**Monitoring Station:** Sardega Village Well

Date of sampling	Water level(depth from ground level in meters)
29-May-19	7.19
17-Aug-19	2.64
19-Nov-19	3.71
20-Feb-20	1.37

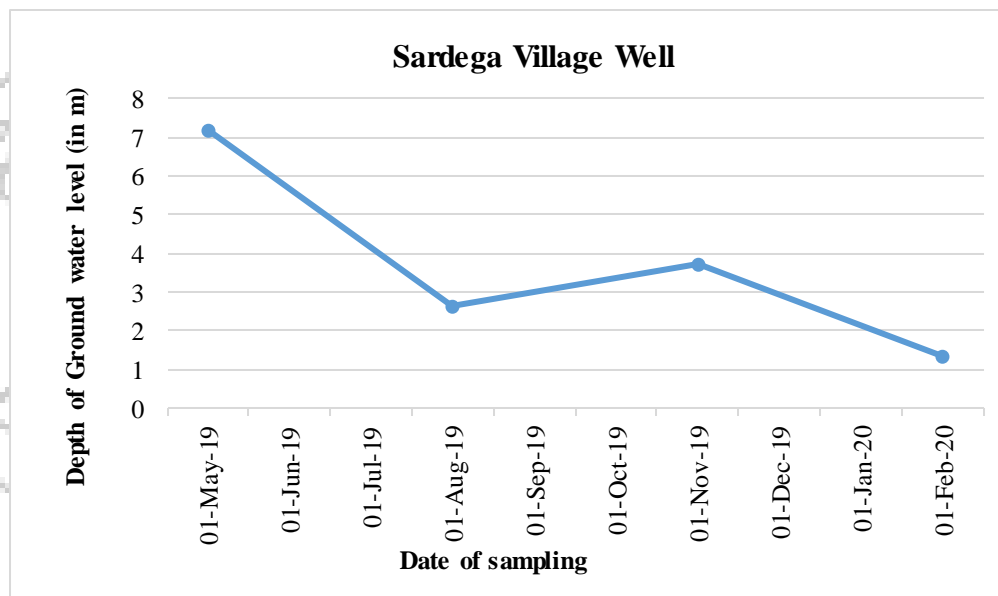


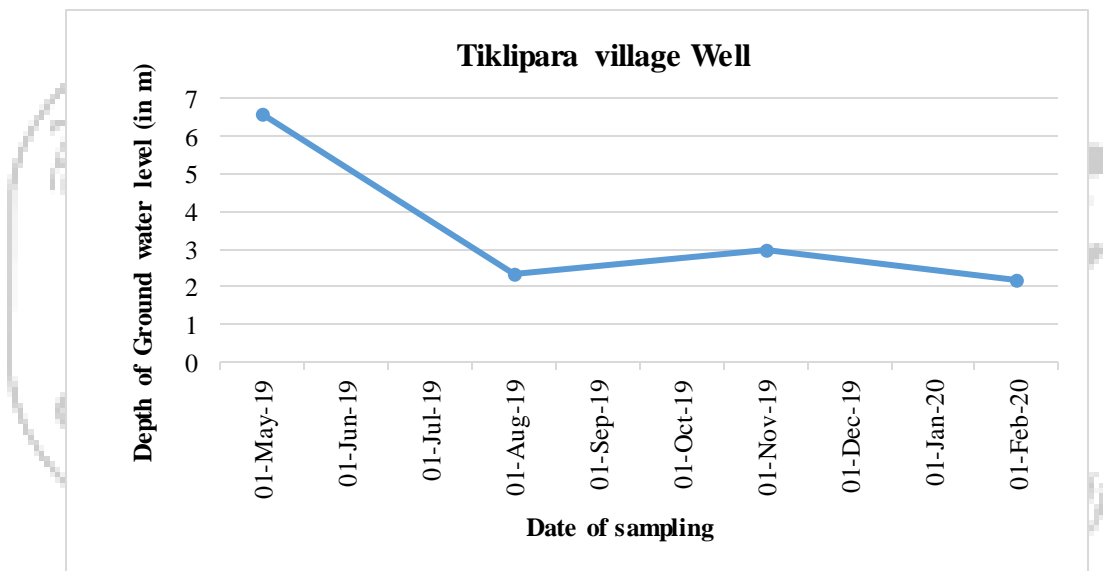
Table159

**Area:** Basundhara-Garjanbahal

**Project:** Basundhara OCP

**Monitoring Station:** Tiklipara village Well

Date of sampling	Water level(depth from ground level in meters)
29-May-19	6.58
17-Aug-19	2.36
19-Nov-19	2.95
20-Feb-20	2.18



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

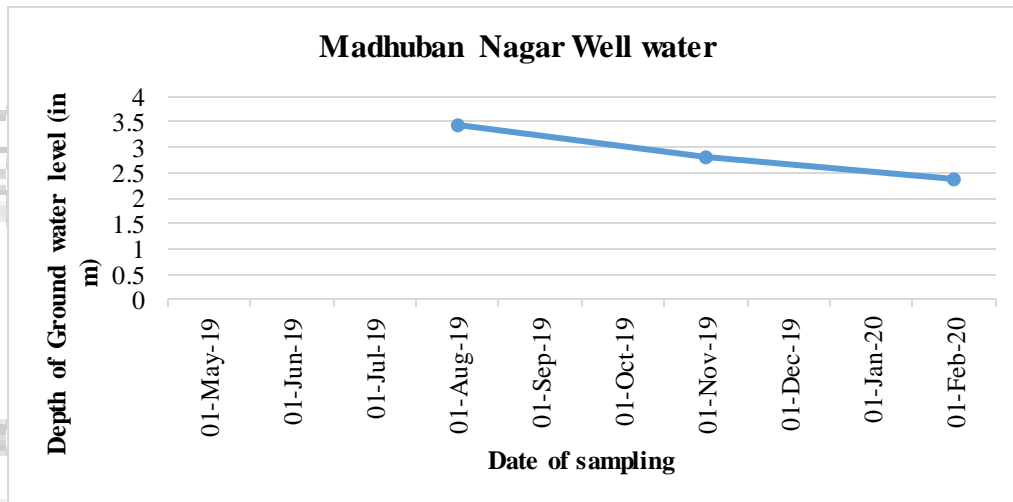
Table:160

**Area:** Orient

**Project:** Orient Mine no. 2

**Monitoring Station:** Madhuban Nagar Village Well

Date of sampling	Water level(depth from ground level in meters)
30-May-19	DRY
22-Aug-19	3.45
21-Nov-19	2.82
19-Feb-20	2.39



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

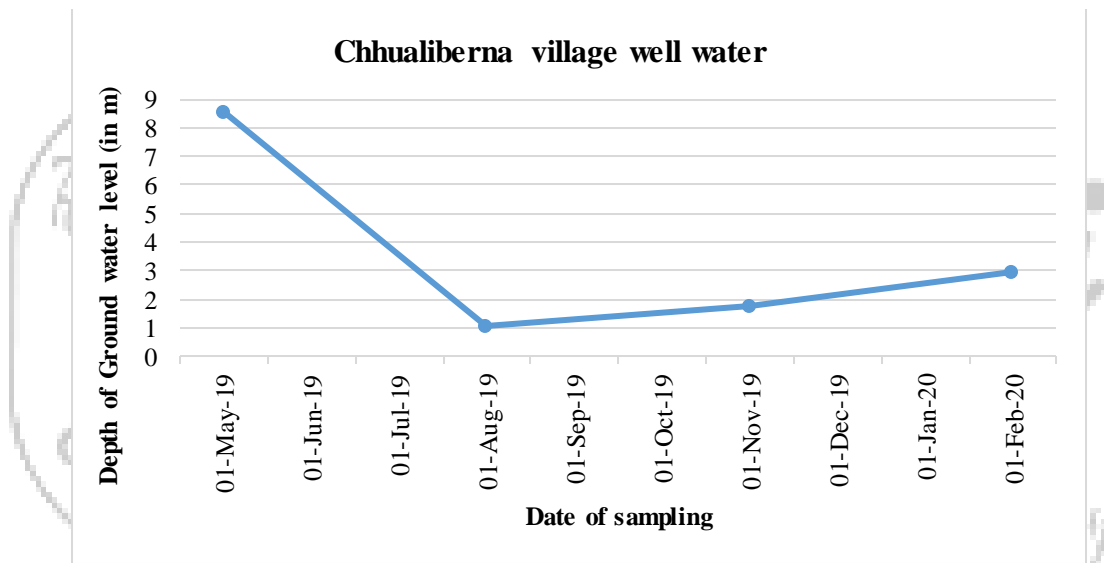
Table:161

**Area:** Orient

**Project:** Orient Mine no. 2

**Monitoring Station:** Chhualibera Village Well Water (Repeated)

Date of sampling	Water level(depth from ground level in meters)
30-May-19	8.53
22-Aug-19	1.09
25-Nov-19	1.75
19-Feb-20	2.95



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table162

**Area:** Orient

**Project:** Orient Mine no. 3

**Monitoring Station:** Well of Chingriguda (Repeated)

Date of sampling	Water level(depth from ground level in meters)
30-May-19	3.15
26-Aug-19	2.67
26-Nov-19	2.90
19-Feb-20	1.73

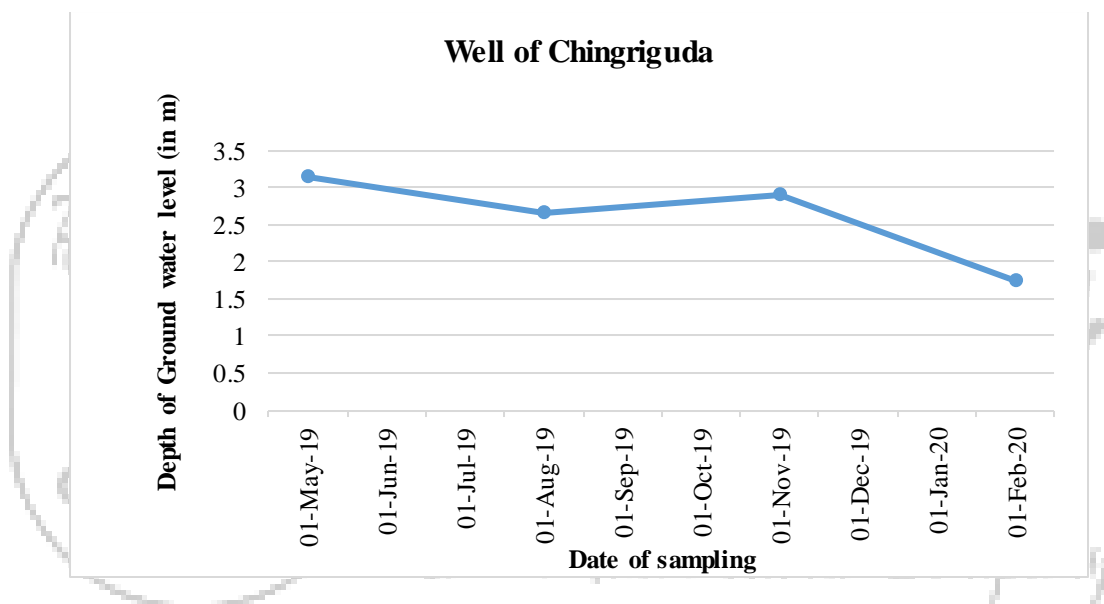


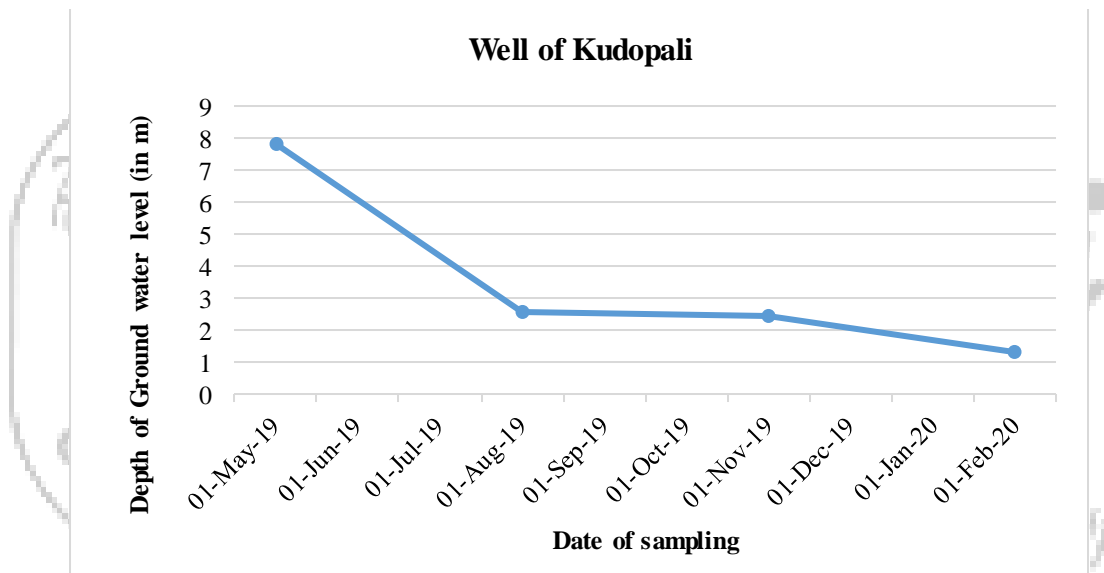
Table:163

Area:Orient

Project: Orient Mine no. 3

Monitoring Station: Well of Kudopali (Repeated)

Date of sampling	Water level(depth from ground level in meters)
19-Feb-20	1.35
26-Nov-19	2.46
26-Aug-19	2.57
30-May-19	7.85





ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

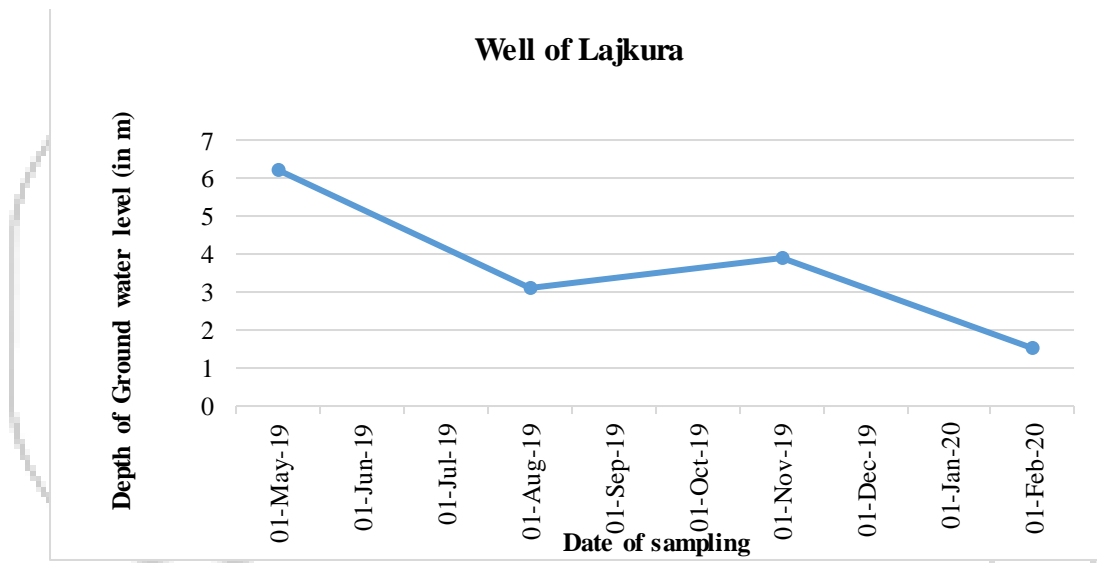
Table:164

**Area:** Orient

**Project :** Orient Mine no. 3

**Monitoring Station:** Well of Lajkura (Repeated)

Date of sampling	Water level (depth from ground level in meters)
30-May-19	6.22
26-Aug-19	3.10
26-Nov-19	3.89
19-Feb-20	1.52



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

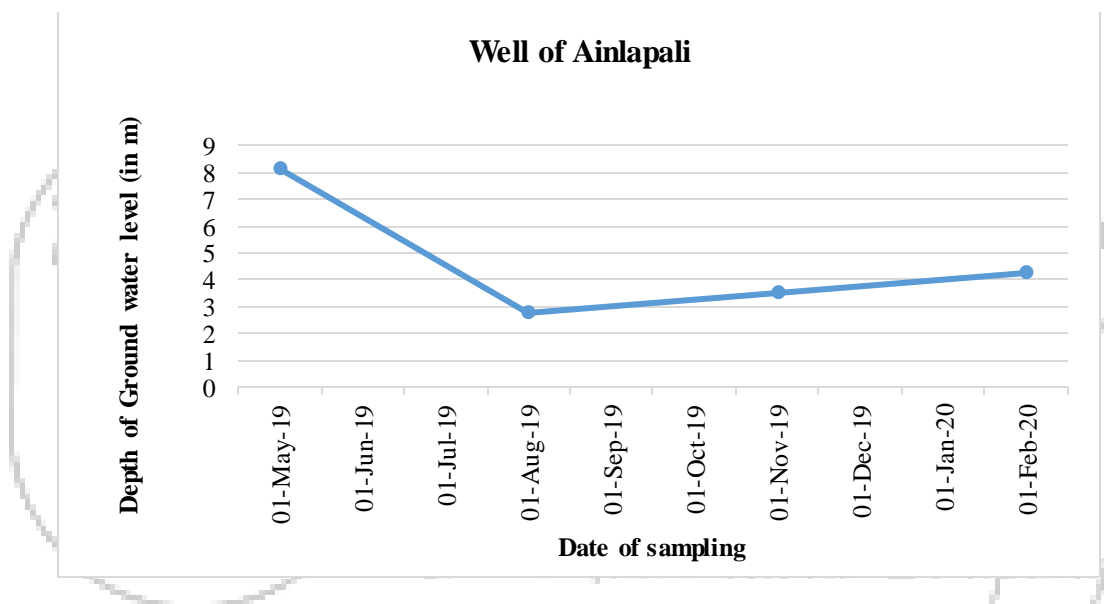
Table:165

**Area:** Orient

**Project:** Orient Mine no. 3

**Monitoring Station:** Well of Ainalpali (Repeated)

Date of sampling	Water level (depth from ground level in meters)
30-May-19	8.13
26-Aug-19	2.74
26-Nov-19	3.53
19-Feb-20	4.22



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:166

**Area:** Orient

**Project:** Orient Mine no.4

**Monitoring Station:** Adibasi Basti Village Well

Date of sampling	Water level(depth from ground level in meters)
30-May-19	1.70
28-Aug-19	WELL NOT FOUND
29-Nov-19	2.5
20-Feb-20	WELL NOT FOUND

Table167

**Area:** Orient

**Project:** Orient Mine no.4

**Monitoring Station:** Jhopadi Basti Village Well

Date of sampling	Water level(depth from ground level in meters)
30-May-19	DRY
28-Aug-19	Not Found
29-Nov-19	Dry
19-Feb-20	0.56



# **DRINKING WATER QUALITY MONITORING**

*A Mini Ratna Company*

## 9. DRINKING WATER QUALITY DATA

Table:168

Area: Ib valley

Project: Samaleswari OCP

Monitoring Station: Well Water from Chingriguda

Date of sampling	13/05/2019	Acceptable	Permissible
Colour (Hazen)	2	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity (NTU)	3	1	5
pH	6.94	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	92	200	600
Chloride(mg/L)	92	250	1000
Total Hardness(Ca CO <sub>3</sub> )(mg/L)	220	200	600
Calcium(mg/L)	65.6	75	200
Sulphate(mg/L)	13.33	200	400
Nitrate(mg/L)	44.9	45	No relaxation
Fluoride(mg/L)	<0.30	1	1.5
Total Dissolve Solid(mg/L)	504	500	2000
Boron(mg/L)	0.15	0.5	1.0
Iron(mg/L)	<0.1	0.3	No relaxation
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Zinc(mg/L)	0.04	5	15
Lead(mg/L)	<0.005	0.01	No relaxation
Cadmium(mg/L)	<0.001	0.003	No relaxation
Total Chromium (mg/L)	<0.02	0.05	No relaxation
Arsenic(mg/L)	<0.005	0.01	0.05

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:169

Area: Ib valley

Project: Samaleswari OCP

Monitoring Station: Well Water from Kudopali

Project / OCP		Indian Drinking Standards (IS-10500):2012	
Monitoring Station	<b>Well water from Kudopali</b>		
Date of sampling	<b>13/05/2019</b>	<b>Acceptable</b>	<b>Permissible</b>
Colour(Hazen)	13	<b>5</b>	<b>15</b>
Odour	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
Taste	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
Turbidity(NTU)	1	<b>1</b>	<b>5</b>
pH	6.98	<b>6.5-8.5</b>	<b>No relaxation</b>
Total Alkalinity(mg/L)	12	<b>200</b>	<b>600</b>
Chloride(mg/L)	14	<b>250</b>	<b>1000</b>
Total Hardness(Ca CO <sub>3</sub> )(mg/L)	20	<b>200</b>	<b>600</b>
Calcium(mg/L)	4.8	<b>75</b>	<b>200</b>
Sulphate(mg/L)	1.21	<b>200</b>	<b>400</b>
Nitrate(mg/L)	9.77	<b>45</b>	<b>No relaxation</b>
Fluoride(mg/L)	<0.30	<b>1</b>	<b>1.5</b>
Total Dissolve Solid(mg/L)	80	<b>500</b>	<b>2000</b>
Boron(mg/L)	<0.10	<b>0.5</b>	<b>1.0</b>
Iron(mg/L)	<0.1	<b>0.3</b>	<b>No relaxation</b>
Copper(mg/L)	<0.03	<b>0.05</b>	<b>1.5</b>
Manganese(mg/L)	<0.04	<b>0.1</b>	<b>0.3</b>
Zinc(mg/L)	<0.04	<b>5</b>	<b>15</b>
Lead(mg/L)	<0.005	<b>0.01</b>	<b>No relaxation</b>
Cadmium(mg/L)	<0.001	<b>0.003</b>	<b>No relaxation</b>
Total Chromium (mg/L)	<0.02	<b>0.05</b>	<b>No relaxation</b>
Arsenic(mg/L)	<0.005	<b>0.01</b>	<b>0.05</b>

**Indian Drinking Standards (IS-10500):2012**

Table:170

Area: Ib valley

Project: Samaleswari OCP

Monitoring Station: Well Water from Lajkura

Project / OCP	Samaleswari OCP	Indian Drinking Standards (IS-10500):2012	
		Acceptable	Permissible
Monitoring Station	Well water from Lajkura		
Date of sampling	13 May 2019		
Colour(Hazen)	9	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	5	1	5
pH	6.90	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	68	200	600
Chloride(mg/L)	32	250	1000
Total Hardness(Ca CO <sub>3</sub> )(mg/L)	692	200	600
Calcium(mg/L)	169.6	75	200
Sulphate(mg/L)	388.85	200	400
Nitrate(mg/L)	<0.5	45	No relaxation
Fluoride(mg/L)	0.53	1	1.5
Total Dissolve Solid(mg/L)	1240	500	2000
Boron(mg/L)	0.10	0.5	1.0
Iron(mg/L)	<0.1	0.3	No relaxation
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	0.16	0.1	0.3
Zinc(mg/L)	<0.04	5	15
Lead(mg/L)	<0.005	0.01	No relaxation
Cadmium(mg/L)	<0.001	0.003	No relaxation
Total Chromium (mg/L)	<0.02	0.05	No relaxation
Arsenic(mg/L)	<0.005	0.01	0.05

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:171

Area: Ib valley

Project: Samaleswari OCP

Monitoring Station: Well Water Ainlapali

Project / OCP	Samaleswari OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Well water Ainapali	Acceptable	Permissible
Date of sampling	13/05/2019	Acceptable	Permissible
Colour(Hazen)	14	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	1	5
pH	5.86	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	20	200	600
Chloride(mg/L)	14	250	1000
Total Hardness(Ca CO <sub>3</sub> )(mg/L)	12	200	600
Calcium(mg/L)	3.2	75	200
Sulphate(mg/L)	1.62	200	400
Nitrate(mg/L)	7.35	45	No relaxation
Fluoride(mg/L)	<0.30	1	1.5
Total Dissolve Solid(mg/L)	172	500	2000
Boron(mg/L)	<0.10	0.5	1.0
Iron(mg/L)	<0.1	0.3	No relaxation
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Zinc(mg/L)	<0.04	5	15
Lead(mg/L)	<0.005	0.01	No relaxation
Cadmium(mg/L)	<0.001	0.003	No relaxation
Total Chromium (mg/L)	<0.02	0.05	No relaxation
Arsenic(mg/L)	<0.005	0.01	0.05

Indian Drinking Standards (IS-10500):2012



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:172

Area: Ib valley

Project: Samaleswari OCP

Monitoring Station: Tap Water from Samleswari OCP Colony

Date of sampling	12/04/2019	13/05/2019	14/06/2019	12/Jul/2019	Acceptable	Permissible
Colour(Hazen)	5	5	1	3	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	2	2	1	1	5
pH	7.37	7.79	7.90	7.52	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	104	92	104	112	200	600
Chloride(mg/L)	32	30	30	26	250	1000
Total Hardness(mg/L)	96	88	92	88	200	600
Calcium(mg/L)	19.2	20.8	19.2	24.05	75	200
Sulphate(mg/L)	8.43	7.94	4.24	10	200	400
Nitrate(mg/L)	<0.5	<0.5	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	0.31	<0.30	<0.30	<0.30	1	1.5
Total Dissolve Solid(mg/L)	268	306	272	278	500	2000
Boron(mg/L)	<0.02	0.15	<0.1	<0.1	0.5	1.0
Iron(mg/L)	<0.06	<0.1	0.12	<0.1	0.3	No relaxation
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.02	<0.04	<0.04	<0.04	0.1	0.3
Zinc(mg/L)	0.17	0.05	0.15	0.16	5	15
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Cadmium(mg/L)	<0.0005	<0.001	<0.001	<0.001	0.003	No relaxation
Total Chromium (mg/L)	<0.05	<0.02	<0.02	<0.02	0.05	No relaxation
Arsenic(mg/L)	<0.002	<0.005	<0.005	<0.005	0.01	0.05

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:173

Area: Ib valley

Project: Samaleswari OCP

Monitoring Station: Tap Water from Samleswari OCP Colony

Date of Sampling	14/Aug/19	14/Sep/2019	15/Oct/19	13/Nov/19	Acceptable	Permissible
Colour(Hazen)	1	2	3	10	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	<1	3	2	1	1	5
pH	7.86	7.09	7.19	6.99	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	136	36	76	84	200	600
Chloride(mg/L)	30	14	20	8	200	600
Total Hardness(Ca CO3)(mg/L)	152	68	68	53.7	0.3	No relaxation
Calcium(mg/L)	25.65	14.43	17.6	14.8	250	1000
Sulphate(mg/L)	10	25	17.34	9.85	500	2000
Nitrate(mg/L)	<0.5	<0.5	<0.5	<0.5	75	200
Fluoride(mg/L)	<0.30	0.49	<0.30	<0.30	0.05	1.5
Total Dissolve Solid(mg/L)	358	178	228	118	0.1	0.3
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	200	400
Iron(mg/L)	<0.1	<0.1	<0.1	<0.1	45	No relaxation
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	1	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.01	0.05
Zinc(mg/L)	<0.04	0.2	0.22	0.13	0.01	No relaxation
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	5	15
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.05	No relaxation
Total Chromium (mg/L)	<0.02	<0.02	<0.01	<0.01	0.5	1.0
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:174

Area: Ib valley

Project: Samaleswari OCP

Monitoring Station: Tap Water from Samleswari OCP Colony

Date of Sampling	13/Dec/2019	11/Jan/2020	11/Feb/2020	14/Mar/2020	Acceptable	Permissible
Colour(Hazen)	4	6	3	3	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	2	1	1	1	5
pH	7.10	7.08	6.76	7.21	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	104	88	84	116	200	600
Total Hardness (Ca CO3)(mg/L)	93.5	88.7	89	96	200	600
Iron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	24	6	22	20	250	1000
Total Dissolve Solid(mg/L)	198	152	184	198	500	2000
Calcium(mg/L)	26.16	22.66	24.28	24	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	16.42	19.53	13.58	10.82	200	400
Nitrate(mg/L)	<0.5	<0.5	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	0.35	<0.30	<0.30	<0.3	1	1.5
Arsenic(mg/L)	<0.05	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	<0.04	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	<0.01	<0.01	0.01	No relaxation
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:175

Area: Ib valley

Project: Samaleswari OCP

Monitoring Station: Water from IWSS, IB Valley Area

Date of sampling	13/May/2019	14/Sep/2019	14/Mar/2020	Acceptable	Permissible
Colour (Hazen)	6	5	5	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity (NTU)	6	4	2	1	5
pH	7.91	7.01	7.53	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	56	32	92	200	600
Chloride(mg/L)	12	8	26	250	1000
Total Hardness(Ca CO <sub>3</sub> )(mg/L)	48	28	92	200	600
Calcium(mg/L)	14.4	9.62	22.4	75	200
Sulphate(mg/L)	5.38	12	10.97	200	400
Nitrate(mg/L)	<0.5	<0.5	4.07	45	No relaxation
Fluoride(mg/L)	0.30	<0.3	<0.3	1	1.5
Total Dissolve Solid(mg/L)	196	114	202	500	2000
Boron(mg/L)	<0.10	<0.1	<0.1	0.5	1.0
Iron(mg/L)	<0.1	<0.1	<0.1	0.3	No relaxation
Copper(mg/L)	<0.03	<0.03	<0.3	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	0.1	0.3
Zinc(mg/L)	<0.04	<0.04	<0.04	5	15
Lead(mg/L)	<0.005	<0.005	<0.005	0.01	No relaxation
Cadmium(mg/L)	<0.001	<0.001	<0.001	0.003	No relaxation
Total Chromium (mg/L)	<0.02	<0.02	<0.01	0.05	No relaxation
Arsenic(mg/L)	<0.005	<0.005	<0.005	0.01	0.05

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:176  
**Area:** Ib valley  
**Project:** Lajkura OCP  
**Monitoring Station:** Madhuban Nagar Well Water

Date of sampling	13/Apr/2019	13/May/2019	11/Jul/2019	14/Aug/2019	Acceptable	Permissible
Colour (Hazen)	4	DRY	DRY	2	5	15
Odour	Agreeable			Agreeable	Agreeable	Agreeable
Taste	Agreeable			Agreeable	Agreeable	Agreeable
Turbidity (NTU)	1			3	1	5
pH	5.15			7.92	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	4			88	200	600
Total Hardness(mg/L)	24			212	200	600
Iron(mg/L)	0.29			<0.10	0.3	No relaxation
Chloride(mg/L)	14			42	250	1000
Total Dissolve Solid(mg/L)	158			444	500	2000
Calcium(mg/L)	6.4			48.09	75	200
Copper(mg/L)	0.03			<0.03	0.05	1.5
Manganese(mg/L)	<0.02			<0.04	0.1	0.3
Sulphate(mg/L)	1.14			34	200	400
Nitrate(mg/L)	18.30			40.95	45	No relaxation
Fluoride(mg/L)	0.19			<0.30	1	1.5
Arsenic(mg/L)	<0.002			<0.005	0.01	0.05
Lead(mg/L)	<0.005			<0.005	0.01	No relaxation
Zinc(mg/L)	0.57			<0.10	5	15
Total Chromium (mg/L)	<0.05			<0.02	0.05	No relaxation
Boron(mg/L)	<0.2	<0.1	0.5	1.0		
Cadmium(mg/L)	<0.0005	<0.001	0.003	No relaxation		

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:177

Area: Ib valley

Project: Lajkura OCP

Monitoring Station: Madhuban Nagar Well Water

Date of Sampling	13/Sep/2019	15/Oct/2019	13/Nov/2019	13/Dec/2019	Acceptable	Permissible
Colour(Hazen)	1	2	12	IN	5	15
Odour	Agreeable	Agreeable	Agreeable	ACCESSIBLE	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable		Agreeable	Agreeable
Turbidity(NTU)	3	1	5		1	5
pH	7.65	6.62	6.61		6.5-8.5	No relaxation
Total Alkalinity(mg/L)	92	76	52		200	600
Chloride(mg/L)	30	30	76		250	1000
Total Hardness(CaCO <sub>3</sub> )(mg/L)	100	56	74.4		200	600
Calcium(mg/L)	14.43	17.6	19.8		75	200
Sulphate(mg/L)	15	18.13	28.09		200	400
Nitrate(mg/L)	<0.5	13.79	9.45		45	No relaxation
Fluoride(mg/L)	<0.3	<0.30	<0.30		1	1.5
Total Dissolve Solid(mg/L)	252	248	248		500	2000
Boron(mg/L)	<0.1	<0.1	<0.1		0.5	1.0
Iron(mg/L)	<0.1	<0.10	<0.1		0.3	No relaxation
Copper(mg/L)	<0.03	<0.03	<0.03		0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04		0.1	0.3
Zinc(mg/L)	<0.04	0.06	<0.04		5	15
Lead(mg/L)	<0.005	<0.005	<0.005		0.01	No relaxation
Cadmium(mg/L)	<0.001	<0.001	<0.001		0.003	No relaxation
Total Chromium (mg/L)	<0.02	<0.01	<0.01		0.01	No relaxation
Arsenic(mg/L)	<0.005	<0.005	<0.005	0.01	0.05	

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:178

Area: Ib valley

Project: Lajkura OCP

Monitoring Station: Madhuban Nagar Well Water

Date of Sampling	14/Mar/2020	Acceptable	Permissible
Colour(Hazen)	8	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	4	1	5
pH	7.63	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	64	200	600
Total Hardness (Ca CO <sub>3</sub> )(mg/L)	76	200	600
Iron(mg/L)	<0.1	0.3	No relaxation
Chloride(mg/L)	22	250	1000
Total Dissolve Solid(mg/L)	154	500	2000
Calcium(mg/L)	22.4	75	200
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Sulphate(mg/L)	8.84	200	400
Nitrate(mg/L)	6.07	45	No relaxation
Fluoride(mg/L)	<0.3	1	1.5
Arsenic(mg/L)	<0.005	0.01	0.05
Lead(mg/L)	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	5	15
Total Chromium (mg/L)	<0.01	0.01	No relaxation
Boron(mg/L)	<0.1	0.5	1.0
Cadmium(mg/L)	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:179

Area: Ib valley

Project: Lajkura OCP

Monitoring Station: Adarsh Nagar Colony Well Water

Date of sampling	12/Apr/19	13/May/19	14/Jun/19	11/Jul/19	Acceptable	Permissible
Colour(Hazen)	5	10	2	2	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	1	3	5	1	5
pH	6.70	7.72	6.95	6.75	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	64	80	132	132	200	600
Total Hardness(mg/L)	56	72	140	128	200	600
Iron(mg/L)	<0.06	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	14	16	28	58	250	1000
Total Dissolve Solid(mg/L)	163	212	374	426	500	2000
Calcium(mg/L)	14.4	20.8	33.6	35.27	75	200
Copper(mg/L)	<0.03	<0.030	<0.03	<0.30	0.05	1.5
Manganese(mg/L)	<0.02	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	6.14	7.27	31.34	33	200	400
Nitrate(mg/L)	<0.5	<0.05	4.92	22.4	45	No relaxation
Fluoride(mg/L)	0.28	<0.30	<0.30	<0.30	1	1.5
Arsenic(mg/L)	<0.002	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.02	<0.04	0.012	<0.04	5	15
Total Chromium (mg/L)	<0.05	<0.002	<0.02	<0.02	0.05	No relaxation
Boron(mg/L)	<0.2	<0.10	<0.10	<0.10	0.05	1.0
Cadmium(mg/L)	<0.0005	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:180  
**Area:** Ib valley  
**Project:** Lajkura OCP  
**Monitoring Station:** Adarsh Nagar Colony Well Water

Date of Sampling	14/Aug/2019	13/Sep/2019	15/Oct/2019	13/Nov/2019	Acceptable	Permissible
Colour(Hazen)	2	2	4	6	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	4	4	3	1	1	5
pH	7.06	6.90	6.67	7.28	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	112	120	96	72	200	600
Chloride(mg/L)	70	34	48	8	250	1000
Total Hardness(Ca CO <sub>3</sub> )(mg/L)	188	108	128	49.6	200	600
Calcium(mg/L)	41.68	19.24	33.6	13.2	75	200
Sulphate(mg/L)	49	9	47.97	10.59	200	400
Nitrate(mg/L)	42.53	1.83	34.81	<0.5	45	No relaxation
Fluoride(mg/L)	<0.30	0.49	<0.30	<0.30	1	1.5
Total Dissolve Solid(mg/L)	494	298	398	106	500	2000
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Iron(mg/L)	<0.1	<0.1	<0.10	<0.1	0.3	No relaxation
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Zinc(mg/L)	<0.04	<0.04	<0.04	0.10	5	15
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation
Total Chromium (mg/L)	<0.02	<0.02	<0.01	<0.01	0.05	No relaxation
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:181

Area: Ib valley

Project: Lajkura OCP

Monitoring Station: Adarsh Nagar Colony Well Water

Date of Sampling	13/Dec/19	11/Jan/20	10/Feb/20	14/Mar/20	Acceptable	Permissible
Colour(Hazen)	4	1	2	5	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	3	1	1	3	1	5
pH	6.54	6.51	6.53	7.78	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	116	108	104	136	200	600
Total Hardness (Ca CO <sub>3</sub> )(mg/L)	117.8	121	125.5	128	200	600
Iron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	36	46	40	38	250	1000
Total Dissolve Solid(mg/L)	248	286	288	308	500	2000
Calcium(mg/L)	32.7	33.99	32.38	38.4	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	40.3	37.97	31.93	31.39	200	400
Nitrate(mg/L)	10.41	10.23	7.78	10.36	45	No relaxation
Fluoride(mg/L)	0.32	<0.30	<0.3	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	<0.04	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	<0.01	<0.01	0.01	No relaxation
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:182

Area: Ib valley

Project: Lajkura OCP

Monitoring Station: Chhualiberna Village Well Water

Date of sampling	13/Apr/2019	13/May/2019	14/Jun/2019	11/Jul/2019	Acceptable	Permissible
Colour(Hazen)	7	6	3	4	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	3	4	2	4	1	5
pH	7.00	7.96	7.60	7.60	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	64	68	36	108	200	600
Total Hardness(mg/L)	140	148	116	188	200	600
Iron(mg/L)	<0.06	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	74	82	84	68	250	1000
Total Dissolve Solid(mg/L)	349	390	354	462	500	2000
Calcium(mg/L)	40	44.8	35.2	62.52	75	200
Copper(mg/L)	<0.03	<0.30	<0.030	<0.03	0.05	1.5
Manganese(mg/L)	<0.02	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	25.43	21.13	24.71	33	200	400
Nitrate(mg/L)	16.3	18.16	18.96	34	45	No relaxation
Fluoride(mg/L)	0.35	<0.3	<0.03	<0.30	1	1.5
Arsenic(mg/L)	<0.002	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.04	<0.04	0.08	<0.04	5	15
Total Chromium (mg/L)	<0.05	<0.005	<0.02	<0.02	0.05	no relaxation
Boron(mg/L)	<0.2	0.15	<0.1	<0.1	0.5	1.0
Cadmium(mg/L)	<0.0005	<0.001	<0.001	<0.001	0.003	no relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:183

Area: Ib valley

Project: Lajkura OCP

Monitoring Station: Chhualiberna Village Well Water

Date of Sampling	14/Aug/2019	13/Sep/2019	15/Oct/2019	13/Nov/2019	Acceptable	Permissible
<b>Colour(Hazen)</b>	4	1	3	4	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity(NTU)</b>	4	2	3	2	<b>1</b>	<b>5</b>
<b>pH</b>	6.89	6.88	6.69	7.17	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	76	124	92	132	<b>200</b>	<b>600</b>
<b>Chloride(mg/L)</b>	58	36	24	34	<b>250</b>	<b>1000</b>
<b>Total Hardness (Ca CO3)(mg/L)</b>	204	112	124	136.3	<b>200</b>	<b>600</b>
<b>Calcium(mg/L)</b>	49.69	24.05	36.8	46.2	<b>75</b>	<b>200</b>
<b>Sulphate(mg/L)</b>	33	10	42.81	29.85	<b>200</b>	<b>400</b>
<b>Nitrate(mg/L)</b>	42.79	2.48	13.1	7.17	<b>45</b>	<b>No relaxation</b>
<b>Fluoride(mg/L)</b>	<0.30	0.6	<0.30	<0.30	<b>1</b>	<b>1.5</b>
<b>Total Dissolve Solid(mg/L)</b>	448	314	364	236	<b>500</b>	<b>2000</b>
<b>Boron(mg/L)</b>	<0.1	<0.1	<0.1	<0.1	<b>0.5</b>	<b>1.0</b>
<b>Iron(mg/L)</b>	<0.10	<0.1	<0.10	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	0.03	<0.03	<b>0.05</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.04	<0.04	<0.04	<0.04	<b>0.1</b>	<b>0.3</b>
<b>Zinc(mg/L)</b>	<0.04	0.08	<0.04	0.04	<b>5</b>	<b>15</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>No relaxation</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<b>0.003</b>	<b>No relaxation</b>
<b>Total Chromium (mg/L)</b>	<0.02	<0.02	<0.01	<0.01	<b>0.05</b>	<b>No relaxation</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>0.05</b>

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:184  
**Area:** Ib valley  
**Project:** Lajkura OCP  
**Monitoring Station:** Chhualiberna Village Well Water

Date of Sampling	13/Dec/2019	11/Jan/2020	10/Feb/2020	14/Mar/2020	Acceptable	Permissible
Colour(Hazen)	5	2	2	4	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	1	1	2	1	5
pH	6.66	6.53	6.51	7.58	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	104	112	84	100	200	600
Total Hardness (Ca CO <sub>3</sub> )(mg/L)	142.2	153.2	149.8	160	200	600
Iron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	42	60	60	62	250	1000
Total Dissolve Solid(mg/L)	288	314	312	352	500	2000
Calcium(mg/L)	47.41	50.19	48.57	52.8	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	34.33	37.19	34.24	35.04	200	400
Nitrate(mg/L)	7.11	10.35	11.64	23.49	45	No relaxation
Fluoride(mg/L)	0.41	0.38	<0.3	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	0.007	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	<0.04	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	<0.01	<0.01	0.01	No relaxation
Boron(mg/L)	<0.1	<0.1	<0.01	<0.01	0.5	1.0
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:185  
**Area:** Ib valley  
**Project:** Lajkura OCP  
**Monitoring Station:** Adarsh Nagar Tap Water

Date of sampling	12/Apr/2019	13/May/2019	14/June/2019	11/Jul/2019	Acceptable	Permissible
<b>Colour(Hazen)</b>	5	13	2	5	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity(NTU)</b>	2	<1	1	3	<b>1</b>	<b>5</b>
<b>pH</b>	7.66	7.95	8.14	6.95	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	64	64	56	20	<b>200</b>	<b>600</b>
<b>Total Hardness(mg/L)</b>	56	60	56	48	<b>200</b>	<b>600</b>
<b>Iron(mg/L)</b>	<0.06	<0.1	0.14	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Chloride(mg/L)</b>	14	12	14	10	<b>250</b>	<b>1000</b>
<b>Total Dissolve Solid(mg/L)</b>	163	234	142	142	<b>500</b>	<b>2000</b>
<b>Calcium(mg/L)</b>	14.4	<0.5	14.4	8.02	<b>75</b>	<b>200</b>
<b>Copper(mg/L)</b>	<0.03	<0.030	<0.03	<0.03	<b>0.05</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.02	<0.04	<0.04	<0.04	<b>0.1</b>	<b>0.3</b>
<b>Sulphate(mg/L)</b>	6.14	5.25	4.24	34	<b>200</b>	<b>400</b>
<b>Nitrate(mg/L)</b>	<0.5	<0.5	<0.5	<0.5	<b>45</b>	<b>No relaxation</b>
<b>Fluoride(mg/L)</b>	0.28	<0.30	0.43	<0.30	<b>1</b>	<b>1.5</b>
<b>Arsenic(mg/L)</b>	<0.002	<0.005	<0.005	<0.005	<b>0.01</b>	<b>0.05</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>No relaxation</b>
<b>Zinc(mg/L)</b>	<0.02	<0.04	<0.04	0.11	<b>5</b>	<b>15</b>
<b>Total Chromium (mg/L)</b>	<0.05	<0.02	<0.02	<0.02	<b>0.05</b>	<b>No relaxation</b>
<b>Boron(mg/L)</b>	<0.2	.125	<0.1	<0.1	0.5	1.0
<b>Cadmium(mg/L)</b>	<0.0005	<0.001	<0.001	<0.001	0.003	<b>No relaxation</b>

**Indian Drinking Standards (IS-10500):2012**

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:186  
**Area:** Ib valley  
**Project:** Lajkura OCP  
**Monitoring Station:** Adarsh Nagar Tap Water

Date of Sampling	14/Aug/2019	13/Sep/2019	15/Oct/2019	13/Nov/2019	Acceptable	Permissible
<b>Colour(Hazen)</b>	1	3	4	1	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity(NTU)</b>	<1	1	2	1	<b>1</b>	<b>5</b>
<b>pH</b>	7.12	6.84	6.71	6.88	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	24	120	28	128	<b>200</b>	<b>600</b>
<b>Chloride(mg/L)</b>	10	36	12	42	<b>250</b>	<b>1000</b>
<b>Total Hardness(Ca CO3)(mg/L)</b>	84	108	44	123.9	<b>200</b>	<b>600</b>
<b>Calcium(mg/L)</b>	9.62	20.84	12.8	33	<b>75</b>	<b>200</b>
<b>Sulphate(mg/L)</b>	21	9	24.69	36.76	<b>200</b>	<b>400</b>
<b>Nitrate(mg/L)</b>	<0.5	1.97	<0.5	16.73	<b>45</b>	<b>No relaxation</b>
<b>Fluoride(mg/L)</b>	<0.30	0.36	<0.30	<0.30	<b>1</b>	<b>1.5</b>
<b>Total Dissolve Solid(mg/L)</b>	176	306	138	242	<b>500</b>	<b>2000</b>
<b>Boron(mg/L)</b>	<0.1	<0.1	<0.1	<0.1	<b>0.5</b>	<b>1.0</b>
<b>Iron(mg/L)</b>	<0.10	<0.1	<0.10	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	0.03	<0.03	<b>0.05</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.04	<0.04	<0.04	<0.04	<b>0.1</b>	<b>0.3</b>
<b>Zinc(mg/L)</b>	0.09	1.36	0.11	<0.04	<b>5</b>	<b>15</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>No relaxation</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<b>0.003</b>	<b>No relaxation</b>
<b>Total Chromium (mg/L)</b>	<0.02	<0.02	<0.01	<0.01	<b>0.05</b>	<b>No relaxation</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>0.05</b>

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:187

Area: Ib valley

Project: Lajkura OCP

Monitoring Station: Adarsh Nagar Tap Water

Date of Sampling	13/Dec/2019	11/Jan/2020	10/Feb/2020	14/Mar/2020	Acceptable	Permissible
Colour(Hazen)	5	3.0	2	3	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	2	1	2	1	5
pH	7.28	7.39	7.34	7.93	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	84	96	64	80	200	600
Total Hardness (Ca CO <sub>3</sub> )(mg/L)	81.3	96.8	68.8	76	200	600
Iron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	14	18	12	6	250	1000
Total Dissolve Solid(mg/L)	158	174	124	132	500	2000
Calcium(mg/L)	17.98	21.05	16.19	19.2	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	23.43	28.13	8.52	6.55	200	400
Nitrate(mg/L)	<0.5	<0.5	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	0.35	0.42	<0.3	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	0.06	0.14	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	<0.01	<0.01	0.01	No relaxation
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:188

Area: Lakhanpur

Project: Lilari OCP

Monitoring Station: Jurabaga Village Well Water

Date of sampling	13/Apr/2019	9/May/2019	14/Jun/2019	12/Jul/2019	Acceptable	Permissible
Colour(Hazen)	6	4	4	2	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	3	4	3	5	1	5
pH	7.06	7.57	7.24	6.34	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	88	116	92	24	200	600
Total Hardness(mg/L)	100	116	112	32	200	600
Iron(mg/L)	<0.06	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	24	22	18	12	250	1000
Total Dissolve Solid(mg/L)	250	282	290	116	500	2000
Calcium(mg/L)	17.6	22.4	20.8	9.62	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.02	<0.04	0.05	<0.04	0.1	0.3
Sulphate(mg/L)	9.57	6.06	15.11	6	200	400
Nitrate(mg/L)	3.20	3.38	3.76	<0.5	45	No relaxation
Fluoride(mg/L)	0.41	0.41	0.3	<0.30	1	1.5
Arsenic(mg/L)	<0.002	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.00	0.01	No relaxation
Zinc(mg/L)	<0.02	0.08	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.05	<0.02	<0.02	<0.02	0.05	No relaxation
Boron(mg/L)	<0.2	0.150	0.104	<0.1	0.5	1.0
Cadmium(mg/L)	<0.0005	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:189

Area: Lakhanpur

Project: Lilari OCP

Monitoring Station: Jurabaga Village Well Water

Date of Sampling	14/Aug/2019	13/Sep/2019	16/Oct/2019	13/Nov/2019	Acceptable	Permissible
Colour(Hazen)	7	2	5	11	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	5	2	1	2	1	5
pH	6.57	7.22	6.57	6.82	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	16	164	24	96	200	600
Chloride(mg/L)	14	36	10	12	250	1000
Total Hardness(Ca CO <sub>3</sub> )(mg/L)	76	160	36	61.9	200	600
Calcium(mg/L)	8.02	38.47	8.0	18.1	75	200
Sulphate(mg/L)	8	10	6.09	15	200	400
Nitrate(mg/L)	6.44	2.13	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	<0.30	<0.3	<0.30	<0.30	1	1.5
Total Dissolve Solid(mg/L)	148	398	104	128	500	2000
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Iron(mg/L)	<0.10	<0.1	<0.10	<0.1	0.3	No relaxation
Copper(mg/L)	<0.03	<0.03	0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Zinc(mg/L)	<0.04	<0.04	<0.04	<0.04	5	15
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation
Total Chromium (mg/L)	<0.02	<0.02	<0.01	<0.01	0.05	No relaxation
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:190

Area: Lakhanpur

Project: Lilari OCP

Monitoring Station: Jurabaga Village Well Water

Date of Sampling	12/Dec/2019	15/Jan/2020	11/Feb/2020	13/Mar/2020	Acceptable	Permissible
Colour(Hazen)	7	8.0	7	5	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	4	3	3	1	5
pH	7.31	6.67	6.75	7.96	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	64	60	64	120	200	600
Total Hardness (Ca CO <sub>3</sub> )(mg/L)	65	52.4	68.8	152	200	600
Iron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	8	16	14	32	250	1000
Total Dissolve Solid(mg/L)	126	104	136	312	500	2000
Calcium(mg/L)	21.25	11.33	19.43	49.6	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	21.34	10.78	6.65	33.98	200	400
Nitrate(mg/L)	<0.5	<0.5	<0.5	27.26	45	No relaxation
Fluoride(mg/L)	<0.30	0.45	<0.30	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	<0.04	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	<0.01	<0.01	0.01	No relaxation
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:191  
**Area:** Lakhanpur  
**Project:** Lakhanpur OCP  
**Monitoring Station:** LKP Canteen Tap Water

Date of sampling	13/Apr/2019	9/May/2019	14/Jun/2019	12/Jul/2019	Acceptable	Permissible
<b>Colour(Hazen)</b>	8	12	3	3	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity(NTU)</b>	2	1	2	1	<b>1</b>	<b>5</b>
<b>pH</b>	7.32	7.87	7.95	7.83	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	56	60	56	88	<b>200</b>	<b>600</b>
<b>Total Hardness(mg/L)</b>	68	68	80	100	<b>200</b>	<b>600</b>
<b>Iron(mg/L)</b>	<0.06	<0.1	<0.1	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Chloride(mg/L)</b>	14	16	22	38	<b>250</b>	<b>1000</b>
<b>Total Dissolve Solid(mg/L)</b>	166	174	230	294	<b>500</b>	<b>2000</b>
<b>Calcium(mg/L)</b>	17.6	20.8	22.4	30.46	<b>75</b>	<b>200</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	<0.03	<0.03	<b>0.5</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.02	<0.04	<0.04	<0.04	<b>0.1</b>	<b>0.3</b>
<b>Sulphate(mg/L)</b>	9.57	10.90	16.24	27	<b>200</b>	<b>400</b>
<b>Nitrate(mg/L)</b>	<0.5	<0.5	<0.5	7.55	<b>45</b>	<b>No relaxation</b>
<b>Fluoride(mg/L)</b>	0.26	0.40	0.36	0.45	<b>1</b>	<b>1.5</b>
<b>Arsenic(mg/L)</b>	<0.002	<0.005	<0.005	<0.005	<b>0.01</b>	<b>0.05</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	0.008	<0.005	<b>0.01</b>	<b>No relaxation</b>
<b>Zinc(mg/L)</b>	0.14	<0.004	0.08	0.04	<b>5</b>	<b>15</b>
<b>Total Chromium (mg/L)</b>	<0.05	<0.02	<0.02	<0.02	<b>0.5</b>	<b>No relaxation</b>
<b>Boron(mg/L)</b>	<0.2	<0.10	<0.1	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Cadmium(mg/L)</b>	<0.0005	<0.001	<0.001	<0.001	<b>0.003</b>	<b>No relaxation</b>

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:192  
**Area:** Lakhanpur  
**Project:** Lakhanpur OCP  
**Monitoring Station:** LKP Canteen Tap Water

Date of Sampling	14/Aug/2019	14/Sep/2019	16/Oct/2019	13/Nov/2019	Acceptable	Permissible
<b>Colour(Hazen)</b>	2	1	4	4	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity(NTU)</b>	<1	3	3	1	<b>1</b>	<b>5</b>
<b>pH</b>	7.34	7.26	6.76	7.48	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	48	44	32	76	<b>200</b>	<b>600</b>
<b>Chloride(mg/L)</b>	24	10	8	6	<b>250</b>	<b>1000</b>
<b>Total Hardness(Ca CO<sub>3</sub>)(mg/L)</b>	120	76	48	53.7	<b>200</b>	<b>600</b>
<b>Calcium(mg/L)</b>	24.05	16.03	14.4	16.5	<b>75</b>	<b>200</b>
<b>Sulphate(mg/L)</b>	35	21	22.34	13.38	<b>200</b>	<b>400</b>
<b>Nitrate(mg/L)</b>	<0.5	<0.5	<0.5	<0.5	<b>45</b>	<b>No relaxation</b>
<b>Fluoride(mg/L)</b>	0.94	<0.3	<0.30	<0.30	<b>1</b>	<b>1.5</b>
<b>Total Dissolve Solid(mg/L)</b>	274	168	146	114	<b>500</b>	<b>2000</b>
<b>Boron(mg/L)</b>	<0.1	<0.1	<0.1	<0.1	<b>0.5</b>	<b>1.0</b>
<b>Iron(mg/L)</b>	<0.10	<0.1	<0.10	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	<0.03	<0.03	<b>0.05</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.04	<0.04	<0.04	<0.04	<b>0.1</b>	<b>0.3</b>
<b>Zinc(mg/L)</b>	<0.04	<0.04	0.15	0.05	<b>5</b>	<b>15</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>No relaxation</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<b>0.003</b>	<b>No relaxation</b>
<b>Total Chromium (mg/L)</b>	<0.02	<0.02	<0.01	<0.01	<b>0.05</b>	<b>No relaxation</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>0.05</b>

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:193  
**Area:** Lakhanpur  
**Project:** Lakhanpur OCP  
**Monitoring Station:** LKP Canteen Tap Water

Date of Sampling	12/Dec/2019	15/Jan/2020	11/Feb/2020	13/Mar/2020	Acceptable	Permissible
<b>Colour(Hazen)</b>	8	5.0	3	3	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity(NTU)</b>	1	1	2	2	<b>1</b>	<b>5</b>
<b>pH</b>	7.23	7.39	7.43	7.88	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	56	80	52	60	<b>200</b>	<b>600</b>
<b>Total Hardness (Ca CO3)(mg/L)</b>	56.9	72.6	72.9	64	<b>200</b>	<b>600</b>
<b>Iron(mg/L)</b>	<0.1	<0.1	<0.1	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Chloride(mg/L)</b>	8	6	6	12	<b>250</b>	<b>1000</b>
<b>Total Dissolve Solid(mg/L)</b>	114	122	120	124	<b>500</b>	<b>2000</b>
<b>Calcium(mg/L)</b>	17.98	22.66	21.05	19.2	<b>75</b>	<b>200</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	<0.03	<0.03	<b>0.05</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.04	<0.04	<0.04	<0.04	<b>0.1</b>	<b>0.3</b>
<b>Sulphate(mg/L)</b>	18.81	21.91	15.31	9.6	<b>200</b>	<b>400</b>
<b>Nitrate(mg/L)</b>	<0.5	<0.5	<0.5	4.71	<b>45</b>	<b>No relaxation</b>
<b>Fluoride(mg/L)</b>	0.35	0.40	<0.30	<0.3	<b>1</b>	<b>1.5</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>0.05</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>No relaxation</b>
<b>Zinc(mg/L)</b>	<0.04	0.07	0.07	<0.04	<b>5</b>	<b>15</b>
<b>Total Chromium (mg/L)</b>	<0.01	<0.01	<0.01	<0.01	<b>0.01</b>	<b>No relaxation</b>
<b>Boron(mg/L)</b>	<0.1	<0.1	<0.1	<0.1	<b>0.5</b>	<b>1.0</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<b>0.003</b>	<b>No relaxation</b>

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:194  
**Area:** Lakhanpur  
**Project:** Belpahar OCP  
**Monitoring Station:** IWSS Outlet

Date of sampling	13/Apr/2019	9/May/2019	14/Jun/2019	12/Jul/2019	Acceptable	Permissible
Colour(Hazen)	9	4	3	4	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	2	4	2	1	5
pH	7.46	8.09	7.94	7.76	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	56	64	60	84	200	600
Total Hardness(mg/L)	68	80	76	88	200	600
Iron(mg/L)	<0.06	0.10	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	16	20	24	32	250	1000
Total Dissolve Solid(mg/L)	168	188	240	260	500	2000
Calcium(mg/L)	19.2	22.4	20.8	30.46	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.02	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	11.43	11.04	14.68	26	200	400
Nitrate(mg/L)	<0.5	<0.5	<0.5	0.80	45	No relaxation
Fluoride(mg/L)	0.28	0.40	0.41	0.30	1	1.5
Arsenic(mg/L)	<0.002	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.02	<0.04	0.07	<0.04	5	15
Total Chromium (mg/L)	<0.05	<0.02	<0.02	<0.02	0.05	No relaxation
Boron(mg/L)	<0.2	<0.10	<0.1	<0.1	0.5	1.0
Cadmium(mg/L)	<0.0005	<0.0001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:195  
**Area:** Lakhanpur  
**Project:** Belpahar OCP  
**Monitoring Station:** IWSS Outlet

Date of Sampling	14/Aug/2019	14/Sep/2019	16/Oct/2019	13/Nov/2019	Acceptable	Permissible
<b>Colour(Hazen)</b>	1	3	3	2	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity(NTU)</b>	<1	4	2	3	<b>1</b>	<b>5</b>
<b>pH</b>	7.31	7.20	7.40	7.59	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	48	44	48	80	<b>200</b>	<b>600</b>
<b>Chloride(mg/L)</b>	22	14	12	10	<b>250</b>	<b>1000</b>
<b>Total Hardness(Ca CO<sub>3</sub>)(mg/L)</b>	124	72	56	53.7	<b>200</b>	<b>600</b>
<b>Calcium(mg/L)</b>	25.65	20.84	19.2	14.8	<b>75</b>	<b>200</b>
<b>Sulphate(mg/L)</b>	35	21	16.41	11.32	<b>200</b>	<b>400</b>
<b>Nitrate(mg/L)</b>	<0.5	<0.5	<0.5	<0.5	<b>45</b>	<b>No relaxation</b>
<b>Fluoride(mg/L)</b>	0.94	<0.3	<0.30	<0.30	<b>1</b>	<b>1.5</b>
<b>Total Dissolve Solid(mg/L)</b>	278	174	170	120	<b>500</b>	<b>2000</b>
<b>Boron(mg/L)</b>	<0.1	<0.1	<0.1	<0.1	<b>0.5</b>	<b>1.0</b>
<b>Iron(mg/L)</b>	<0.10	<0.1	<0.10	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	<0.03	<0.03	<b>0.05</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.04	<0.04	<0.04	<0.04	<b>0.1</b>	<b>0.3</b>
<b>Zinc(mg/L)</b>	0.05	<0.04	<0.04	<0.04	<b>5</b>	<b>15</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>No relaxation</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<b>0.003</b>	<b>No relaxation</b>
<b>Total Chromium (mg/L)</b>	<0.02	<0.002	<0.01	<0.01	<b>0.05</b>	<b>No relaxation</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>0.05</b>

Indian Drinking Standards (IS-10500):2012



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:196  
**Area:** Lakhanpur  
**Project:** Belpahar OCP  
**Monitoring Station:** IWSS Outlet

Date of Sampling	12/Dec/2019	15/Jan/2020	11/Feb/2020	13/Mar/2020	Acceptable	Permissible
Colour(Hazen)	7	3	4	3	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	2	2	2	1	5
pH	7.37	7.36	7.57	7.92	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	64	72	52	76	200	600
Total Hardness (Ca CO <sub>3</sub> )(mg/L)	65	72.6	76.9	80	200	600
Iron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	4	8	8	8	250	1000
Total Dissolve Solid(mg/L)	126	120	134	130	500	2000
Calcium(mg/L)	17.98	22.66	21.05	20.8	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	21.19	19.06	13.87	8.23	200	400
Nitrate(mg/L)	<0.5	<0.5	36.03	<0.5	45	No relaxation
Fluoride(mg/L)	<0.30	0.47	<0.30	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	0.006	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	0.06	0.10	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	<0.01	<0.01	0.01	No relaxation
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:197

**Area:** Basundhara-Garjanbahal  
**Project:** KuldaOCP  
**Monitoring Station:** Well at Tumulia

Date of sampling	15/Apr/19	9/May/19	7/Jun/19	5/Jul/19	Acceptable	Permissible
<b>Colour(Hazen)</b>	10	4	4	2	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity(NTU)</b>	4	5	2	5	<b>1</b>	<b>5</b>
<b>pH</b>	7.59	7.81	7.48	7.33	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	208	204	144	180	<b>200</b>	<b>600</b>
<b>Total Hardness(mg/L)</b>	232	224	220	208	<b>200</b>	<b>600</b>
<b>Iron(mg/L)</b>	<0.06	<0.1	<0.1	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Chloride(mg/L)</b>	50	86	60	50	<b>250</b>	<b>1000</b>
<b>Total Dissolve Solid(mg/L)</b>	552	546	574	542	<b>500</b>	<b>2000</b>
<b>Calcium(mg/L)</b>	38.4	36.8	44.8	46.49	<b>75</b>	<b>200</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	<0.03	<0.03	<b>0.05</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.02		<0.04	<0.04	<b>0.1</b>	<b>0.3</b>
<b>Sulphate(mg/L)</b>	20.0	15.62	24.28	26	<b>200</b>	<b>400</b>
<b>Nitrate(mg/L)</b>	15.3	1.18	23.00	43.75	<b>45</b>	<b>No relaxation</b>
<b>Fluoride(mg/L)</b>	0.17	0.70	0.83	0.74	<b>1</b>	<b>1.5</b>
<b>Arsenic(mg/L)</b>	<0.002	<0.005	<0.005	<0.005	<b>0.01</b>	<b>0.05</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>No relaxation</b>
<b>Zinc(mg/L)</b>	<0.02	<0.04	<0.04	<0.04	<b>5</b>	<b>15</b>
<b>Total Chromium (mg/L)</b>	<0.05	<0.02	<0.02	<0.02	<b>0.05</b>	<b>No relaxation</b>
<b>Boron(mg/L)</b>	<0.2	<0.10	<0.10	<0.10	<b>0.5</b>	<b>1.0</b>
<b>Cadmium(mg/L)</b>	<0.0005	<0.001	<0.001	<0.001	<b>0.003</b>	<b>No relaxation</b>

**Indian Drinking Standards (IS-10500):2012**

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:198

**Area:** Basundhara-Garjanbahal  
**Project:** KuldaOCP  
**Monitoring Station:** Well at Tumulia

Date of sampling	7/Aug/2019	11/Sep/2019	15/Oct/2019	13/Nov/2019	Acceptable	Permissible
<b>Colour(Hazen)</b>	3	2	5	3	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity (NTU)</b>	1	2	3	1	<b>1</b>	<b>5</b>
<b>pH</b>	6.90	7.05	7.06	8.26	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	168	148	164	200	<b>200</b>	<b>600</b>
<b>Total Hardness(mg/L)</b>	212	164	176	181.8	<b>200</b>	<b>600</b>
<b>Iron(mg/L)</b>	<0.1	<0.1	<0.1	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Chloride(mg/L)</b>	72	48	44	42	<b>250</b>	<b>1000</b>
<b>Total Dissolve Solid(mg/L)</b>	496	424	488	292	<b>500</b>	<b>2000</b>
<b>Calcium(mg/L)</b>	32.06	38.47	38.4	39.6	<b>75</b>	<b>200</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	<0.03	<0.03	<b>0.05</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.04	<0.04	<0.04	<0.04	<b>0.1</b>	<b>0.3</b>
<b>Sulphate(mg/L)</b>	14	19	19.69	13.68	<b>200</b>	<b>400</b>
<b>Nitrate(mg/L)</b>	12.74	14.65	15.13	15.47	<b>45</b>	<b>No relaxation</b>
<b>Fluoride(mg/L)</b>	0.49	<0.03	<0.3	0.37	<b>1</b>	<b>1.5</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>0.05</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>No relaxation</b>
<b>Zinc(mg/L)</b>	<0.04	0.34	<0.04	<0.04	<b>5</b>	<b>15</b>
<b>Total Chromium (mg/L)</b>	<0.02	<0.02	<0.01	<0.01	<b>0.05</b>	<b>No relaxation</b>
<b>Boron(mg/L)</b>	<0.1	<0.1	<0.10	<0.1	<b>0.5</b>	<b>1.0</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<b>0.003</b>	<b>No relaxation</b>

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:199

**Area:** Basundhara-Garjanbahal  
**Project:** KuldaOCP  
**Monitoring Station:** Well at Tumulia

Date of sampling	7/Dec/2019	11/Jan/2020	10/Feb/2020	9/Mar/2020	Acceptable	Permissible
<b>Colour (Hazen)</b>	6	1	3	5	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity (NTU)</b>	1	1	2	3	<b>1</b>	<b>5</b>
<b>pH</b>	7.40	6.52	7.50	7.44	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	196	76	232	108	<b>200</b>	<b>600</b>
<b>Total Hardness(mg/L)</b>	227.6	88.7	263.1	104	<b>200</b>	<b>600</b>
<b>Iron(mg/L)</b>	<0.1	<0.1	<0.1	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Chloride(mg/L)</b>	30	26	36	10	<b>250</b>	<b>1000</b>
<b>Total Dissolve Solid(mg/L)</b>	384	176	420	176	<b>500</b>	<b>2000</b>
<b>Calcium(mg/L)</b>	60.49	24.28	27.52	24	<b>75</b>	<b>200</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	<0.03	<0.03	<b>0.05</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.04	<0.04	<0.04	<0.04	<b>0.1</b>	<b>0.3</b>
<b>Sulphate(mg/L)</b>	29.25	27.34	26.73	9.75	<b>200</b>	<b>400</b>
<b>Nitrate(mg/L)</b>	23.92	<0.5	37.80	<0.5	<b>45</b>	<b>No relaxation</b>
<b>Fluoride(mg/L)</b>	0.41	0.43	0.33	<0.3	<b>1</b>	<b>1.5</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>0.05</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>No relaxation</b>
<b>Zinc(mg/L)</b>	<0.04	<0.04	0.07	<0.04	<b>5</b>	<b>15</b>
<b>Total Chromium (mg/L)</b>	<0.01	<0.01	<0.01	<0.01	<b>0.01</b>	<b>No relaxation</b>
<b>Boron(mg/L)</b>	<0.1	<0.1	<0.1	<0.1	<b>0.5</b>	<b>1.0</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<b>0.003</b>	<b>No relaxation</b>

**Indian Drinking Standards (IS-10500):2012**

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:200

**Area:** Basundhara-Garjanbahal  
**Project:** KuldaOCP  
**Monitoring Station:** Filter Plant

Date of sampling	15/Apr/19	9/May/19	07/Jun/19	5/Jun/19	Acceptable	Permissible
<b>Colour (Hazen)</b>	12	11	6	4	5	15
<b>Odour</b>	Agreeable	Agreeable	Agreeable		Agreeable	Agreeable
<b>Taste</b>	Agreeable	Agreeable	Agreeable		Agreeable	Agreeable
<b>Turbidity (NTU)</b>	4	1	7	4	1	5
<b>pH</b>	7	7.97	8.34	7.48	6.5-8.5	No relaxation
<b>Total Alkalinity(mg/L)</b>	204	232	196	152	200	600
<b>Total Hardness(mg/L)</b>	248	252	204	188	250	600
<b>Iron(mg/L)</b>	<0.06	<0.1	<0.1	<0.1	0.3	No relaxation
<b>Chloride(mg/L)</b>	26	28	28	18	250	1000
<b>Total Dissolve Solid(mg/L)</b>	560	624	498	462	500	2000
<b>Calcium(mg/L)</b>	46.4	44.8	40	38.48	75	2000
<b>Copper(mg/L)</b>	<0.03	<0.03	<0.03	<0.03		
<b>Manganese(mg/L)</b>	<0.02	<0.04	<0.04	<0.04	0.1	0.3
<b>Sulphate(mg/L)</b>	40.86	55.06	19.77	54	200	400
<b>Nitrate(mg/L)</b>	15.98	36.7	10.19		0.3	No relaxation
<b>Fluoride(mg/L)</b>	0.15	1.62	1.66		1	1.5
<b>Arsenic(mg/L)</b>	<0.002	<0.005	<0.005		0.01	0.05
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005			
<b>Zinc(mg/L)</b>	<0.02	<0.04	0.07			
<b>Total Chromium (mg/L)</b>	<0.05	<0.02	<0.02		0.05	No relaxation
<b>Boron(mg/L)</b>	<0.2	<0.10	<0.10		0.5	1
<b>Cadmium(mg/L)</b>	<0.0005	<0.001	<0.001		0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:201  
**Area:** Basundhara-Garjanbahal  
**Project:** KuldaOCP  
**Monitoring Station:** Filter Plant

Date of sampling	5/Jul/2019	7/Aug/2019	11/Sep/2019	15/Oct/2019	Acceptable	Permissible
Colour (Hazen)	4	2	4	5	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity (NTU)	4	1	3	4	1	5
pH	7.48	7.53	6.97	7.05	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	152	124	96	32	200	600
Chloride(mg/L)	18	16	12	8	250	1000
Total Hardness (Ca CO <sub>3</sub> )(mg/L)	188	232	220	44	200	600
Calcium(mg/L)	38.48	43.28	43.28	11.2	75	200
Sulphate(mg/L)	54	74	114	16.41	200	400
Nitrate(mg/L)	20	15.75	22.1	<0.5	45	No relaxation
Fluoride(mg/L)	1.42	1.40	1.25	<0.30	1	1.5
Total Dissolve Solid(mg/L)	462	494	468	132	500	2000
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Iron(mg/L)	<0.1	<0.10	<0.1	<0.10	0.3	No relaxation
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Zinc(mg/L)	<0.04	<0.04	0.13	<0.04	5	15
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation
Total Chromium (mg/L)	<0.02	<0.02	<0.02	<0.01	0.05	No relaxation
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:202

**Area:** Basundhara-Garjanbahal  
**Project:** KuldaOCP  
**Monitoring Station:** Filter Plant

Date of Sampling	13/Nov/2019	7/Dec/2019	11/Jan/2020	1/Feb/2020	9/Mar/2020	Acceptable	Per
<b>Colour (Hazen)</b>	4	9	8	5	4	<b>5</b>	
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	Ag
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	Ag
<b>Turbidity (NTU)</b>	1	2	3	2	2	<b>1</b>	
<b>pH</b>	7.31	7.86	7.55	7.56	8.10	<b>6.5-8.5</b>	rel
<b>Total Alkalinity(mg/L)</b>	100	48	124	116	148	<b>200</b>	
<b>Manganese(mg/L)</b>	<0.04	<0.04	<0.04	<0.04	<0.04	<b>0.1</b>	
<b>Total Hardness (Ca CO<sub>3</sub>)(mg/L)</b>	148.7	109.7	229.8	238.8	244	<b>200</b>	
<b>Chloride(mg/L)</b>	18	4	10	14	12	<b>250</b>	
<b>Sulphate(mg/L)</b>	52.64	86.57	97.19	86.54	84.56	<b>200</b>	
<b>Calcium(mg/L)</b>	34.7	26.16	46.95	45.33	52.8	<b>75</b>	
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	
<b>Total Dissolve Solid(mg/L)</b>	244	234	362	354	368	<b>500</b>	
<b>Boron(mg/L)</b>	<0.1	<0.1	<0.1	<0.1	<0.1	<b>0.5</b>	
<b>Iron(mg/L)</b>	<0.1	0.13	<0.1	<0.1	<0.1	<b>0.3</b>	rel
<b>Nitrate(mg/L)</b>	27.06	4.57	21.2	32.57	15.84	<b>45</b>	rel
<b>Copper(mg/L)</b>	<0.03	<0.03	<0.03	<0.03	<0.03	<b>0.05</b>	
<b>Fluoride(mg/L)</b>	0.55	0.45	<0.30	0.34	<0.3	<b>1</b>	
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	rel
<b>Zinc(mg/L)</b>	<0.04	<0.04	<0.04	0.04	<0.04	<b>5</b>	
<b>Total Chromium (mg/L)</b>	<0.01	<0.01	<0.01	<0.01	<0.01	<b>0.05</b>	rel
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<0.001	<b>0.003</b>	rel

**Indian Drinking Standards (IS-10500):2012**

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:203

**Area:** Basundhara-Garjanbahal

**Project:** GarhanbahalOCP

**Monitoring Station:** Well at Garjanbahal Village

Date of sampling	15/Apr/19	9/May/19	7/Aug/19	11/Sep/2019	Acceptable	Permissible
Colour(Hazen)	9	DRY	DRY	3	5	15
Odour	Agreeable			Agreeable	Agreeable	Agreeable
Taste	Agreeable			Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2			2	1	5
pH	6.98			6.21	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	72			44	200	600
Total Hardness(mg/L)	84			72	200	600
Iron(mg/L)	<0.06			<0.1	0.3	No relaxation
Chloride(mg/L)	38			38	250	1000
Total Dissolve Solid(mg/L)	231			184	500	2000
Calcium(mg/L)	19.2			16.03	75.	200.00
Copper(mg/L)	<0.03			<0.03	0.05	1.5
Manganese(mg/L)	<0.02			<0.04	0.1	0.3
Sulphate(mg/L)	10.71			18	200	400
Nitrate(mg/L)	<0.5			<0.5	45	No relaxation
Fluoride(mg/L)	0.19			0.36	1	1.5
Arsenic(mg/L)	<0.002			<0.005	0.01	0.05
Lead(mg/L)	<0.005			<0.005	0.1	No relaxation
Zinc(mg/L)	0.02			0.09	5	15
Total Chromium (mg/L)	<0.05			<0.02	0.5	No relaxation
Boron(mg/L)	<0.2	<0.1	0.5	1.0		
Cadmium(mg/L)	<0.0005	<0.001	0.003	No relaxation		

Indian Drinking Standards (IS-10500):2012



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Table:204

Area: Basundhara-Garjanbahal

Project: Garhanbahal OCP

Monitoring Station: Well at Garjanbahal Village

Date of Sampling	15/Oct/19	13/Nov/19	7/Dec/19	13/Mar/20	Acceptable	Permissible
Colour (Hazen)	DRY	DRY	DRY	10	5	15
Odour				Agreeable	Agreeable	Agreeable
Taste				Agreeable	Agreeable	Agreeable
Turbidity (NTU)				5	1	5
pH				7.41	6.5-8.5	No relaxation
Total Alkalinity(mg/L)				64	200	600
Chloride(mg/L)				52	250	1000
Total Hardness (mg/L)				104	200	600
Calcium(mg/L)				35.2	75	200
Sulphate(mg/L)				22.4	200	400
Nitrate(mg/L)				21.75	45	No relaxation
Fluoride(mg/L)				<0.3	1	1.5
Total Dissolve Solid(mg/L)				258	500	2000
Boron(mg/L)				<0.1	0.5	1.0
Iron(mg/L)				<0.1	0.3	No relaxation
Copper(mg/L)				<0.03	0.05	1.5
Manganese(mg/L)				<0.04	0.1	0.3
Zinc(mg/L)				<0.04	5	15
Lead(mg/L)				<0.005	0.01	No relaxation
Cadmium(mg/L)				<0.001	0.003	No relaxation
Total Chromium (mg/L)				<0.01	0.01	No relaxation
Arsenic(mg/L)	<0.005	0.01	0.05			

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:205

**Area:** Basundhara-Garjanbahal  
**Project:** GarhanbahalOCP  
**Monitoring Station:** Well at Karlikachar

Date of sampling	15/Apr/19	9/May/19	7/Aug/19	11/Sep/19	Acceptable	Permissible
Colour(Hazen)	5	DRY	DRY	1	5	15
Odour	Agreeable			Agreeable	Agreeable	Agreeable
Taste	Agreeable			Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1			4	1	5
pH	7.81			6.28	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	140			44	200	600
Total Hardness(mg/L)	136			80	200	600
Iron(mg/L)	<0.06			<0.1	0.3	No relaxation
Chloride(mg/L)	20			36	250	1000
Total Dissolve Solid(mg/L)	316			188	500	2000
Calcium(mg/L)	28.8			14.43	75	200
Copper(mg/L)	<0.03			<0.03	0.05	1.5
Manganese(mg/L)	0.36			<0.04	0.1	0.3
Sulphate(mg/L)	12.29			18	200	400
Nitrate(mg/L)				<0.5	45	No relaxation
Fluoride(mg/L)	0.20			<0.3	1	1.5
Arsenic(mg/L)	<0.002			<0.005	0.01	0.05
Lead(mg/L)	<0.005			<0.005	0.01	No relaxation
Zinc(mg/L)	0.02			0.07	5	15
Total Chromium (mg/L)	<0.05			<0.02	0.5	No relaxation
Boron(mg/L)	<0.2	<0.1	0.5	1.0		
Cadmium(mg/L)	<0.0005	<0.001	0.003	No relaxation		

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:206

**Area:** Basundhara-Garjanbahal  
**Project:** GarhanbahalOCP  
**Monitoring Station:** Well at Karlikachar

Date of Sampling	15/Oct/19	13/Nov/19	7/Dec/19	Acceptable	Permissible
Colour (Hazen)	DRY	DRY	DRY	5	15
Odour				Agreeable	Agreeable
Taste				Agreeable	Agreeable
Turbidity (NTU)				1	5
pH				6.5-8.5	No relaxation
Total Alkalinity(mg/L)				200	600
Chloride(mg/L)				200	600
Total Hardness(Ca CO <sub>3</sub> )(mg/L)				0.3	No relaxation
Calcium(mg/L)				250	1000
Sulphate(mg/L)				500	2000
Nitrate(mg/L)				75	200
Fluoride(mg/L)				0.05	1.5
Total Dissolve Solid(mg/L)				0.1	0.3
Boron(mg/L)				200	400
Iron(mg/L)				45	No relaxation
Copper(mg/L)				1	1.5
Manganese(mg/L)				0.01	0.05
Zinc(mg/L)				0.01	No relaxation
Lead(mg/L)				5	15
Cadmium(mg/L)				0.05	No relaxation
Total Chromium (mg/L)	0.5	1.0			
Arsenic(mg/L)	0.003	No relaxation			

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:207

Area: Basundhara-Garjanbahal

Project: Basundhara OCP

Monitoring Station: Basundhara Colony Tap Water

Date of sampling	15-Apr-19	9-May-19	7-Jun-19	5-Jul-19	Acceptable	Permissible
Colour(Hazen)	6	8	4	5	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	2	3	1	1	5
pH	7.43	7.80	7.83	7.76	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	36	52	52	60	200	600
Total Hardness(mg/L)	124	132	128	128	200	600
Iron(mg/L)	<0.06	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	14	12	10	12	250	1000
Total Dissolve Solid(mg/L)	300	258	324	304	500	2000
Calcium(mg/L)	25.6	27.2	27.2	30.46	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.02	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	71.0	56.14	68.61	57	200	400
Nitrate(mg/L)	<0.5	<0.5	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	0.25	0.86	0.83	0.68	1	1.5
Arsenic(mg/L)	<0.002	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.09	<0.05	0.08	0.12	5	15
Total Chromium (mg/L)	<0.05	<0.02	<0.02	<0.02	0.05	No relaxation
Boron(mg/L)	<0.2	<0.10	0.104	<0.1	0.5	1
Cadmium(mg/L)	<0.0005	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:208

**Area:** Basundhara-Garjanbahal

**Project:** Basundhara OCP

**Monitoring Station:** Basundhara Colony Tap Water

Date of Sampling	7-Aug-19	11-Sep-19	15-Oct-19	13-Nov-19	Acceptable	Permissible
<b>Colour(Hazen)</b>	1	2	4	6	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity(NTU)</b>	<1	1	2	3	<b>1</b>	<b>5</b>
<b>pH</b>	7.15	6.31	6.60	7.22	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	256	12	16	76	<b>200</b>	<b>600</b>
<b>Chloride(mg/L)</b>	22	8	8	10	<b>200</b>	<b>600</b>
<b>Total Hardness(mg/L)</b>	84	96	116	99.2	<b>0.3</b>	<b>No relaxation</b>
<b>Calcium(mg/L)</b>	11.22	22.44	22.4	23.1	<b>250</b>	<b>1000</b>
<b>Sulphate(mg/L)</b>	8	75	102.97	66.32	<b>500</b>	<b>2000</b>
<b>Nitrate(mg/L)</b>	<0.5	1.68	7.81	5.45	<b>75</b>	<b>200</b>
<b>Fluoride(mg/L)</b>	0.69	0.89	<0.30	0.31	<b>0.05</b>	<b>1.5</b>
<b>Total Dissolve Solid(mg/L)</b>	438	208	270	212	<b>0.1</b>	<b>0.3</b>
<b>Boron(mg/L)</b>	<0.1	<0.1	<0.1	<0.1	<b>200</b>	<b>400</b>
<b>Iron(mg/L)</b>	<0.10	<0.1	<0.10	<0.1	<b>45</b>	<b>No relaxation</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	<0.03	<0.03	<b>1</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.04	<0.04	<0.04	<0.04	<b>0.01</b>	<b>0.05</b>
<b>Zinc(mg/L)</b>	<0.04	0.27	0.53	0.12	<b>0.01</b>	<b>No relaxation</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>5</b>	<b>15</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<b>0.05</b>	<b>No relaxation</b>
<b>Total Chromium (mg/L)</b>	<0.02	<0.02	<0.01	<0.01	<b>0.5</b>	<b>1.0</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.003</b>	<b>No relaxation</b>

**Indian Drinking Standards (IS-10500):2012**

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:209

**Area:** Basundhara-Garjanbahal

**Project:** Basundhara OCP

**Monitoring Station:** Basundhara Colony Tap Water

Date of Sampling	7-Dec-19	11/Jan/2020	11/Feb/2020	9/Mar/2020	Acceptable	Permissible
Colour(Hazen)	8	9.0	4	1	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	3	3	2	1	1	5
pH	7.38	7.26	7.28	7.20	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	40	40	20	20	200	600
Total Hardness (Ca CO <sub>3</sub> )(mg/L)	101.6	112.9	121.4	56	200	600
Iron(mg/L)	0.12	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	4	6	6	22	250	1000
Total Dissolve Solid(mg/L)	226	188	192	126	500	2000
Calcium(mg/L)	22.89	29.14	27.52	16	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.4	0.1	0.3
Sulphate(mg/L)	88.95	83.44	79.09	11.12	200	400
Nitrate(mg/L)	4.69	3.49	7.67	23.56	45	No relaxation
Fluoride(mg/L)	0.39	<0.30	<0.30	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	0.05	0.07	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	<0.01	<0.01	0.05	No relaxation
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:210  
**Area:** Orient  
**Project:** Orient Mine no. 2  
**Monitoring Station:** Tap Water at Budhijaam colony

Date of sampling	4/12/2019	5/14/2019	6/14/2019	11/Jul/2019	Acceptable	Permissible
<b>Colour(Hazen)</b>	4	9	2	5	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity(NTU)</b>	1	1	2	3	<b>1</b>	<b>5</b>
<b>pH</b>	7.73	7.90	8.09	7.58	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	64	60	60	68	<b>200</b>	<b>600</b>
<b>Total Hardness(mg/L)</b>	64	56	56	72	<b>200</b>	<b>600</b>
<b>Iron(mg/L)</b>	<0.06	<0.1	<0.1	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Chloride(mg/L)</b>	16	12	12	22	250	1000
<b>Total Dissolve Solid(mg/L)</b>	172	200	192	218	<b>500</b>	<b>2000</b>
<b>Calcium(mg/L)</b>	14.4	14.4	14.4	17.64	<b>75</b>	<b>200</b>
<b>Copper(mg/L)</b>	<0.03	<0.030	<0.03	<0.03	<b>0.05</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.02	<0.04	<0.04	<0.04	<b>0.1</b>	<b>0.3</b>
<b>Sulphate(mg/L)</b>	6.43	5.52	5.08	27	<b>200</b>	<b>400</b>
<b>Nitrate(mg/L)</b>	<0.5	<0.5	<0.5	<0.5	<b>45</b>	<b>No relaxation</b>
<b>Fluoride(mg/L)</b>	0.29	<0.30	<0.30	<0.30	<b>1</b>	<b>1.5</b>
<b>Arsenic(mg/L)</b>	<0.002	<0.005	<0.005	<0.005	<b>0.01</b>	<b>0.05</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>No relaxation</b>
<b>Zinc(mg/L)</b>	0.02	<0.04	0.05	0.12	<b>5</b>	<b>15</b>
<b>Total Chromium (mg/L)</b>	<0.05	<0.02	<0.02	<0.02	<b>0.05</b>	<b>No relaxation</b>
<b>Boron(mg/L)</b>	<0.2	<0.10	0.155	<0.1	<b>0.5</b>	<b>1</b>
<b>Cadmium(mg/L)</b>	<0.0005	<0.001	<0.001	<0.001	<b>0.003</b>	<b>No relaxation</b>

**Indian Drinking Standards (IS-10500):2012**

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:211

Area: Orient

Project: Orient Mine no. 2

Monitoring Station: Tap Water at Budhijaam colony

Date of Sampling	14/Aug/2019	13/Sep/2019	15/Oct/2019	12/Nov/2019	Acceptable	Permissible
Colour(Hazen)	1	1	5	5	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	<1	3	3	1	1	5
pH	7.38	7.51	6.74	7.52	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	24	132	28	72	200	600
Chloride(mg/L)	10	32	12	10	250	1000
Total Hardness(Ca CO3)(mg/L)	136	120	48	53.7	200	600
Calcium(mg/L)	27.25	24.05	11.2	13.2	75.00	200.00
Sulphate(mg/L)	21	8	23.28	11.18	200	400
Nitrate(mg/L)	<0.5	<0.5	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	<0.30	<0.30	<0.30	<0.30	1	1.5
Total Dissolve Solid(mg/L)	216	324	136	110	500	2000
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Iron(mg/L)	<0.10	<0.1	<0.10	<0.1	0.3	No relaxation
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Zinc(mg/L)	0.06	<0.04	0.11	0.12	5	15
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation
Total Chromium (mg/L)	<0.02	<0.02	<0.01	<0.01	0.05	No relaxation
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05

Indian Drinking Standards (IS-10500):2012



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:212

**Area:** Orient

**Project:** Orient Mine no. 2

**Monitoring Station:** Tap Water at Budhijaam colony

Date of Sampling	14/Dec/2019	11/Jan/2020	10/Feb/2020	4/Mar/2020	Acceptable	Permissible
<b>Colour(Hazen)</b>	5	2	3	5	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity(NTU)</b>	3	1	1	3	<b>1</b>	<b>5</b>
<b>pH</b>	7.44	7.49	7.55	7.91	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	96	96	64	80	<b>200</b>	<b>600</b>
<b>Total Hardness (Ca CO<sub>3</sub>)(mg/L)</b>	89.4	88.7	68.8	80	<b>200</b>	<b>600</b>
<b>Iron(mg/L)</b>	<0.1	<0.1	<0.1	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Chloride(mg/L)</b>	14	16	10	8	<b>250</b>	<b>1000</b>
<b>Total Dissolve Solid(mg/L)</b>	168	176	124	134	<b>500</b>	<b>2000</b>
<b>Calcium(mg/L)</b>	19.62	21.05	17.81	25.6	<b>75</b>	<b>200</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	<0.03	<0.03	<b>0.05</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.04	<0.04	<0.04	<0.04	<b>0.1</b>	<b>0.3</b>
<b>Sulphate(mg/L)</b>	25.52	27.66	9.1	7.47	<b>200</b>	<b>400</b>
<b>Nitrate(mg/L)</b>	<0.5	<0.5	10.55	<0.5	<b>45</b>	<b>No relaxation</b>
<b>Fluoride(mg/L)</b>	<0.30	0.47	<0.30	<0.3	<b>1</b>	<b>1.5</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>0.05</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>No relaxation</b>
<b>Zinc(mg/L)</b>	<0.04	0.13	0.15	<0.04	<b>5</b>	<b>15</b>
<b>Total Chromium (mg/L)</b>	<0.01	<0.01	<0.01	<0.01	<b>0.01</b>	<b>No relaxation</b>
<b>Boron(mg/L)</b>	<0.1	<0.1	<0.1	<0.1	<b>0.5</b>	<b>1.0</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<b>0.003</b>	<b>No relaxation</b>

**Indian Drinking Standards (IS-10500):2012**

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:213

Area: Orient

Project: Orient Mine no. 2

Monitoring Station: Mine no 1&2 filter plant

Date of sampling	4/12/2019	5/14/2019	6/14/2019	11/Jul/2019	Acceptable	Permissible
Colour(Hazen)	4	6	2	4	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	4	2	5	1	5
pH	7.34	7.70	7.58	7.53	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	68	96	88	104	200	600
Total Hardness(mg/L)	96	136	84	80	200	600
Iron(mg/L)	<0.06	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	22	22	26	30	250	1000
Total Dissolve Solid(mg/L)	252	362	316	274	500	2000
Calcium(mg/L)	17.6	33.6	14.4	16.03	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.02	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	36.0	29.89	7.48	10	200	400
Nitrate(mg/L)	<0.5	<0.5	<0.5	0.73	45	No relaxation
Fluoride(mg/L)	0.18	0.47	0.46	0.43	1	1.5
Arsenic(mg/L)	<0.002	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.02	0.06	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.05	<0.02	<0.02	<0.02	0.5	No relaxation
Boron(mg/L)	<0.2	<0.10	<0.10	<0.1	0.5	1
Cadmium(mg/L)	<0.0005	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:214

Area: Orient

Project: Orient Mine no. 2

Monitoring Station: Mine no 1&2 filter plant

Date of Sampling	14/Aug/2019	13/Sep/2019	15/Oct/2019	12/Nov/2019	Acceptable	Permissible
Colour(Hazen)	2	3	4	5	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	<1	1	2	1	1	5
pH	7.17	7.06	7.31	7.18	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	116	112	132	148	200	600
Chloride(mg/L)	30	36	34	26	250	1000
Total Hardness(Ca CO <sub>3</sub> )(mg/L)	144	116	112	99.1	200	600
Calcium(mg/L)	30.46	22.44	20.8	16.5	75.00	200.00
Sulphate(mg/L)	10	9	8.44	15	200	400
Nitrate(mg/L)	<0.5	1.78	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	0.47	0.32	<0.30	0.45	1	1.5
Total Dissolve Solid(mg/L)	344	298	316	188	500	2000
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Iron(mg/L)	<0.10	<0.1	<0.10	<0.1	0.3	No relaxation
Copper(mg/L)	<0.03	<0.03	0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Zinc(mg/L)	<0.04	0.04	<0.04	0.57	5	15
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation
Total Chromium (mg/L)	<0.02	<0.02	<0.01	<0.01	0.05	No relaxation
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:215

Area: Orient

Project: Orient Mine no. 2

Monitoring Station: Mine no 1&2 filter plant

Date of Sampling	14/Dec/2019	11/Jan/2020	10/Feb/2020	14/Mar/2020	Acceptable	Permissible
Colour(Hazen)	8	9.0		4	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	4	1	2	1	5
pH	7.36	6.98	7.03	8.16	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	108	136	100	132	200	600
Total Hardness (Ca CO <sub>3</sub> )(mg/L)	89.4	108.9	101.2	112	200	600
Iron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	22	26	28	22	250	1000
Total Dissolve Solid(mg/L)	162	230	210	228	500	2000
Calcium(mg/L)	14.71	24.28	17.81	30.4	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	15.67	4.69	6.94	12.19	200	400
Nitrate(mg/L)	<0.5	<0.5	7.48	<0.5	45	No relaxation
Fluoride(mg/L)	<0.30	0.34	<0.30	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	<0.04	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	<0.01	<0.01	0.01	No relaxation
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:216  
**Area:** Orient  
**Project:** Orient Mine no. 3  
**Monitoring Station:** Mine no 3 filter plant

Date of sampling	6/14/2019	11/Jul/2019	14/Aug/2019	13/Sep/2019	Acceptable	Permissible
<b>Colour(Hazen)</b>	1	5	8	1	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity(NTU)</b>	1	1	<1	3	<b>1</b>	<b>5</b>
<b>pH</b>	7.08	7.15	7.39	7.02	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	60	76	92	116	<b>200</b>	<b>600</b>
<b>Chloride(mg/L)</b>	20	22	22	34	<b>250</b>	<b>1000</b>
<b>Total Hardness(Ca CO3)(mg/L)</b>	92	84	76	120	<b>200</b>	<b>600</b>
<b>Calcium(mg/L)</b>	17.6	14.43	6.41	20.84	75.00	200.00
<b>Sulphate(mg/L)</b>	31.48	36	31	9	<b>200</b>	<b>400</b>
<b>Nitrate(mg/L)</b>	<0.5	1.10	1.07	1.65	<b>45</b>	<b>No relaxation</b>
<b>Fluoride(mg/L)</b>	0.41	0.36	0.37	0.98	<b>1</b>	<b>1.5</b>
<b>Total Dissolve Solid(mg/L)</b>	224	256	256	306	<b>500</b>	<b>2000</b>
<b>Boron(mg/L)</b>	<0.1	<0.1	<0.1	<0.1	<b>0.5</b>	<b>1.0</b>
<b>Iron(mg/L)</b>	<0.1	<0.1	<0.10	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	<0.03	<0.03	<b>0.05</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.04	<0.04	<0.04	<0.04	<b>0.1</b>	<b>0.3</b>
<b>Zinc(mg/L)</b>	<0.04	<0.04	<0.04	0.16	<b>5</b>	<b>15</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>No relaxation</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<b>0.003</b>	<b>No relaxation</b>
<b>Total Chromium (mg/L)</b>	<0.02	<0.02	<0.02	<0.02	<b>0.05</b>	<b>No relaxation</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>0.05</b>

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:217

Area: Orient

Project: Orient Mine no. 3

Monitoring Station: Mine no 3 filter plant

Date of Sampling	15/Oct/2019	12/Nov/2019	14/Dec/2019	11/Jan/2020	Acceptable	Permissible
<b>Colour(Hazen)</b>	3	6	7	2.0	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity(NTU)</b>	5	1	1	4	<b>1</b>	<b>5</b>
<b>pH</b>	6.85	6.84	6.87	6.90	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	68	84	84	76	<b>200</b>	<b>600</b>
<b>Chloride(mg/L)</b>	22	20	16	18	<b>250</b>	<b>1000</b>
<b>Iron(mg/L)</b>	<0.10	<0.1	<0.1	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Total Hardness(Ca CO<sub>3</sub>)(mg/L)</b>	96	107.4	105.7	96.8	<b>200</b>	<b>600</b>
<b>Sulphate(mg/L)</b>	41.56	42.2	36.86	46.88	<b>200</b>	<b>400</b>
<b>Calcium(mg/L)</b>	19.2	21.5	21.25	22.66	<b>75</b>	<b>200</b>
<b>Fluoride(mg/L)</b>	0.77	0.43	<0.30	0.41	<b>1</b>	<b>1.5</b>
<b>Total Dissolve Solid(mg/L)</b>	274	198	196	182	<b>500</b>	<b>2000</b>
<b>Boron(mg/L)</b>	<0.1	<0.1	<0.1	<0.1	<b>0.5</b>	<b>1.0</b>
<b>Nitrate(mg/L)</b>	<0.5	<0.5	<0.5	<0.5	<b>45</b>	<b>No relaxation</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	<0.03	<0.03	<b>0.05</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.04	<0.04	<0.04	<0.04	<b>0.1</b>	<b>0.3</b>
<b>Zinc(mg/L)</b>	0.04	0.04	<0.04	<0.04	<b>5</b>	<b>15</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>No relaxation</b>
<b>Cadmium(mg/L)</b>	<0.001	<0.001	<0.001	<0.001	<b>0.003</b>	<b>No relaxation</b>
<b>Total Chromium (mg/L)</b>	<0.01	<0.01	<0.01	<0.01	<b>0.05</b>	<b>No relaxation</b>
<b>Arsenic(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.003</b>	<b>No relaxation</b>

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:218

**Area:** Orient

**Project:** Orient Mine no. 3

**Monitoring Station:** Mine no 3 filter plant

Date of Sampling	10/Feb/2020	14/Mar/2020	Acceptable	Permissible
Colour(Hazen)	3	3	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	1	1	5
pH	6.83	7.76	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	56	48	200	600
Total Hardness (Ca CO <sub>3</sub> )(mg/L)	105.2	76	200	600
Iron(mg/L)	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	16	16	250	1000
Total Dissolve Solid(mg/L)	180	156	500	2000
Calcium(mg/L)	21.05	24	75	200
Copper(mg/L)	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	39.59	22.55	200	400
Nitrate(mg/L)	7.88	11.38	45	No relaxation
Fluoride(mg/L)	<0.30	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.01	No relaxation
Boron(mg/L)	<0.1	<0.1	0.5	1.0
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:219  
**Area:** Orient  
**Project:** HBI Mine  
**Monitoring Station:** Tap Water at Rampur Colony

Date of sampling	4/12/2019	5/14/2019	6/14/2019	12/Jul/2019	Acceptable	Permissible
<b>Colour(Hazen)</b>	5	7	3	3	<b>5</b>	<b>15</b>
<b>Odour</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Taste</b>	Agreeable	Agreeable	Agreeable	Agreeable	<b>Agreeable</b>	<b>Agreeable</b>
<b>Turbidity(NTU)</b>	1	2	4	4	<b>1</b>	<b>5</b>
<b>pH</b>	7.77	7.54	7.78	7.63	<b>6.5-8.5</b>	<b>No relaxation</b>
<b>Total Alkalinity(mg/L)</b>	80	124	104	124	<b>200</b>	<b>600</b>
<b>Total Hardness(mg/L)</b>	76	104	92	88	<b>200</b>	<b>600</b>
<b>Iron(mg/L)</b>	<0.06	<0.1	<0.1	<0.1	<b>0.3</b>	<b>No relaxation</b>
<b>Chloride(mg/L)</b>	24	34	24	28	250	1000
<b>Total Dissolve Solid(mg/L)</b>	228	314	258	292	<b>500</b>	<b>2000</b>
<b>Calcium(mg/L)</b>	11.2	19.2	19.2	20.84	<b>75</b>	<b>200</b>
<b>Copper(mg/L)</b>	<0.03	<0.03	<0.03	<0.03	<b>0.05</b>	<b>1.5</b>
<b>Manganese(mg/L)</b>	<0.02	<0.04	<0.04	<0.04	<b>0.1</b>	<b>0.3</b>
<b>Sulphate(mg/L)</b>	14.29	4.04	1.27	13	<b>200</b>	<b>400</b>
<b>Nitrate(mg/L)</b>	<0.5	<0.5	<0.5	<0.5	<b>45</b>	<b>No relaxation</b>
<b>Fluoride(mg/L)</b>	0.31	0.36	<0.30	<0.30	<b>1</b>	<b>1.5</b>
<b>Arsenic(mg/L)</b>	<0.002	<0.005	<0.005	<0.005	<b>0.01</b>	<b>0.05</b>
<b>Lead(mg/L)</b>	<0.005	<0.005	<0.005	<0.005	<b>0.01</b>	<b>No relaxation</b>
<b>Zinc(mg/L)</b>	<0.02	<0.04	<0.04	<0.04	<b>5</b>	<b>15</b>
<b>Total Chromium (mg/L)</b>	<0.05	<0.02	<0.02	<0.02	<b>0.05</b>	<b>No relaxation</b>
<b>Boron(mg/L)</b>	<0.2	0.10	0.104	<0.1	<b>0.5</b>	<b>1</b>
<b>Cadmium(mg/L)</b>	<0.0005	<0.001	<0.001	<0.001	<b>0.003</b>	<b>No relaxation</b>

**Indian Drinking Standards (IS-10500):2012**



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:220  
**Area: Orient**  
**Project: HBI Mine**  
**Monitoring Station: Tap Water at Rampur Colony**

Date of Sampling	14/Aug/2019	13/Sep/2019	15/Oct/2019	13/Nov/2019	Acceptable	Permissible
Colour(Hazen)	2	2	4	6	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	<1	2	1	2	1	5
pH	8.06	7.38	7.61	7.67	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	128	128	136	152	200	600
Chloride(mg/L)	28	30	32	30	250	1000
Total Hardness(Ca CO <sub>3</sub> )(mg/L)	140	124	112	99.1	200	600
Calcium(mg/L)	14.43	27.25	28.80	24.8	75.00	200.00
Sulphate(mg/L)	7	8	8.91	15.59	200	400
Nitrate(mg/L)	<0.5	<0.5	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	0.30	0.53	<0.30	<0.30	1	1.5
Total Dissolve Solid(mg/L)	332	330	322	192	500	2000
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Iron(mg/L)	<0.10	<0.1	<0.10	<0.1	0.3	No relaxation
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Zinc(mg/L)	<0.04	<0.04	<0.04	<0.04	5	15
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation
Total Chromium (mg/L)	<0.02	<0.02	<0.01	<0.01	0.05	No relaxation
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:221  
**Area:** Orient  
**Project:** HBI Mine  
**Monitoring Station:** Tap Water at Rampur Colony

Date of Sampling	14/Dec/2019	11/Jan/2020	10/Feb/2020	14/Mar/2020	Acceptable	Permissible
Colour(Hazen)	5	1	1	3	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	1	1	2	1	5
pH	7.89	7.31	7.35	8.04	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	76	120	112	140	200	600
Total Hardness (Ca CO <sub>3</sub> )(mg/L)	121.9	108.9	105.2	104	200	600
Iron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	26	28	20	24	250	1000
Total Dissolve Solid(mg/L)	208	222	204	218	500	2000
Calcium(mg/L)	34.33	22.66	24.28	28.8	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	12.98	14.69	2.75	6.4	200	400
Nitrate(mg/L)	<0.5	<0.5	9.02	<0.5	45	No relaxation
Fluoride(mg/L)	0.35	<0.30	<0.30	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	<0.04	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	<0.01	<0.01	0.01	No relaxation
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Cadmium(mg/L)	<0.001	<0.001		<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:222

Area: MCL

Project: MCL

Monitoring Station: Tap Water at DAV School (Anand Vihar)

Date of sampling	13/Apr/2019	10/May/2019	13/Jun/2019	11/Jul/2019	Acceptable	Permissible
Colour(Hazen)	4	7	4	4	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	1	2	2	1	5
pH	7.54	8.02	8.11	7.97	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	60	72	60	76	200	600
Total Hardness(mg/L)	72	76	68	80	200	600
Iron(mg/L)	<0.06	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	14	12	12	14	250	1000
Total Dissolve Solid(mg/L)	196	188	176	208	500	2000
Calcium(mg/L)	19.2	22.4	20.8	24.05	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.02	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	9.43	10.63	7.76	11	200	400
Nitrate(mg/L)						
Nitrate(mg/L)	<0.5	<0.5	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	0.19	0.32	<0.30	<0.30	1	1.5
Arsenic(mg/L)	<0.002	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.02	<0.04	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.05	<0.02	<0.02	<0.02	0.05	No relaxation
Boron(mg/L)	<0.2	<0.10	<0.10	<0.10	0.5	1.0
Cadmium(mg/L)	<0.0005	<0.0001	<0.0001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:223

Area: MCL

Project: MCL

Monitoring Station: Tap Water at DAV School (Anand Vihar)

Date of Sampling	12/Aug/2019	13/Sep/2019	19/Oct/2019	14/Nov/2019	Acceptable	Permissible
Colour(Hazen)	3	3	4	4	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	3	2	1	1	1	5
pH	7.70	7.07	7.16	7.92	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	64	28	40	68	200	600
Chloride(mg/L)	14	10	10	14	250	1000
Total Hardness(CaCO <sub>3</sub> )(mg/L)	116	88	68	78.5	200	600
Calcium(mg/L)	20.84	22.44	19.2	24.8	75	200
Sulphate(mg/L)	25	44	35.16	12.21	200	400
Nitrate(mg/L)	<0.5	<0.5	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	0.48	0.51	0.87	<0.30	1	1.5
Total Dissolve Solid(mg/L)	258	184	188	118	500	2000
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Iron(mg/L)	<0.10	<0.1	<0.10	<0.1	0.3	No relaxation
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Zinc(mg/L)	<0.04	0.06	0.04	<0.04	5	15
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation
Total Chromium (mg/L)	<0.02	<0.02	<0.01	<0.01	0.05	No relaxation
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:224

Area: MCL

Project: MCL

Monitoring Station: Tap Water at DAV School (Anand Vihar)

Date of Sampling	13/Dec/19	13/Jan/20	12/Feb/20	14/Mar/20	Acceptable	Permissible
Colour(Hazen)	7	2.0	4	3	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	2	1	1	1	5
pH	7.82	7.67	7.66	7.94	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	80	88	60	92	200	600
Total Hardness (Ca CO <sub>3</sub> )(mg/L)	81.3	76.6	76.9	96	200	600
Iron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	6	10	8	8	250	1000
Total Dissolve Solid(mg/L)	144	124	126	134	500	2000
Calcium(mg/L)	22.89	25.9	22.66	27.2	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	11.19	10.47	10.11	9.75	200	400
Nitrate(mg/L)	<0.5	<0.05	<0.05	<0.5	45	No relaxation
Fluoride(mg/L)	0.35	0.46	<0.30	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	<0.04	0.09	<0.004	5	15
Total Chromium (mg/L)	<0.01	<0.01	<0.01	<0.01	0.01	No relaxation
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:225

Area: MCL

Project: MCL

Monitoring Station: Tap Water at Cooperate Office (Jagruthi Vihar)

Date of sampling	13/Apr/19	10/May/19	13/Jun/2019	11/Jul/19	Acceptable	Permissible
Colour(Hazen)	4	6	3	2	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	1	4	3	1	5
pH	7.61	7.97	8.04	7.63	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	68	76	64	80	200	600
Total Hardness(mg/L)	76	76	72	72	200	600
Iron(mg/L)	<0.06	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	12	12	14	14	250	1000
Total Dissolve Solid(mg/L)	190	190	178	218	500	2000
Calcium(mg/L)	22.4	22.4	20.8	22.44	75	200
Copper(mg/L)	<0.03	<0.030	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.02	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	8.14	11.31	8.61	11	200	400
Nitrate(mg/L)	<0.5	<0.5	<0.5	1.29	45	No relaxation
Fluoride(mg/L)	0.11	<0.30	<0.30	0.30	1	1.5
Arsenic(mg/L)	<0.002	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.03	<0.04	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.05	<0.02	<0.02	<0.02	0.05	No relaxation
Boron(mg/L)	<0.2	0.125	0.13	<0.1	0.5	1.0
Cadmium(mg/L)	<0.0005	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:226

Area: MCL

Project: MCL

Monitoring Station: Tap Water at Cooperate Office (Jagruthi Vihar)

Date of Sampling	12/Aug/19	13/Sep/19	19/Oct/19	14/Nov/19	Acceptable	Permissible
Colour(Hazen)	1	1	3	8	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	<1	4	2	1	1	5
pH	7.77	7.23	7.66	7.82	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	60	28	52	84	200	600
Chloride(mg/L)	12	10	12	12	250	1000
Total Hardness(Ca CO3)(mg/L)	124	92	72	78.5	200	600
Calcium(mg/L)	22.44	24.05	20.8	21.5	75	200
Sulphate(mg/L)	26	43	34.53	14.85	200	400
Nitrate(mg/L)	<0.5	<0.5	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	<0.30	0.88	<0.30	<0.30	1	1.5
Total Dissolve Solid(mg/L)	266	190	176	132	500	2000
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Iron(mg/L)	<0.10	<0.1	<0.10	<0.1	0.3	No relaxation
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Zinc(mg/L)	<0.04	0.04	0.05	<0.04	5	15
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation
Total Chromium (mg/L)	<0.02	<0.02	<0.01	<0.01	0.05	No relaxation
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:227

Area: MCL

Project: MCL

Monitoring Station: Tap Water at Cooperate Office (Jagruthi Vihar)

Date of Sampling	13/Dec/19	13/Jan/20	13/Feb/20	14/Mar/20	Acceptable	Permissible
Colour(Hazen)	8	2.0	3	2	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	1	1	1	1	5
pH	7.72	6.72	7.62	7.99	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	84	96	68	84	200	600
Total Hardness(Ca CO <sub>3</sub> )(mg/L)	73.1	84.7	80.9	92	200	600
Iron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	8	10	8	6	250	1000
Total Dissolve Solid(mg/L)	134	130	124	132	500	2000
Calcium(mg/L)	22.89	25.9	22.66	25.6	75	200
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	11.34	12.19	10.71	9.29	200	400
Nitrate(mg/L)	<0.5	<0.5	9.2	<0.5	45	No relaxation
Fluoride(mg/L)	0.33	0.38	<0.30	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	<0.04	<0.04	<0.04	5	15
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Total Chromium (mg/L)	<0.01	<0.01	<0.01	<0.01	0.05	No relaxation
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012



ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:228

Area: MCL

Project: MCL

Monitoring Station: Inlet to Water Treatment Plant (Anand Vihar)

Date of sampling	13/Jun/19	13/Sep/19	13/Dec/19	14/Mar/20	Acceptable	Permissible
Colour(Hazen)	7	6	8	4	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	4	6	1	2	1	5
pH	7.89	8.18	7.78	7.54	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	60	68	76	88	200	600
Chloride(mg/L)	14	14	6	6	250	1000
Iron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.3	No relaxation
Total Hardness(Ca CO <sub>3</sub> )(mg/L)	72	100	73.1	84	200	600
Sulphate(mg/L)	9.32	12	12.24	6.7	200	400
Calcium(mg/L)	17.6	27.25	21.25	27.2	75	200
Total Dissolve Solid(mg/L)	182	216	130	128	500	2000
Nitrate(mg/L)	<0.5	<0.5	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	<0.30	0.3	0.31	<0.3	1	1.5
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05
Zinc(mg/L)	<0.04	<0.04	<0.04	<0.04	5	15
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Total Chromium (mg/L)	<0.02	<0.02	<0.01	<0.01	0.05	No relaxation
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012

ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table:229  
Area: MCL  
Project: MCL

Monitoring Station: Outlet of Water Treatment Plant (Anand Vihar)

Date of sampling	13/Jun/19	13/Sep/19	13/Dec/19	14/Mar/20	Acceptable	Permissible
Colour(Hazen)	9	2	9	4	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	5	3	3	2	1	5
pH	8.02	6.87	7.63	7.69	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	68	32	92	88	200	600
Chloride(mg/L)	12	10	6	8	250	1000
Total Hardness(Ca CO <sub>3</sub> )(mg/L)	72	92	69.1	92	200	600
Calcium(mg/L)	19.2	19.24	22.89	28.8	75	200
Sulphate(mg/L)	10.45	38	11.04	7.01	200	400
Total Dissolve Solid(mg/L)	194	196	128	136	500	2000
Nitrate(mg/L)	<0.5	<0.5	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	<0.30	0.61	<0.30	<0.3	1	1.5
Boron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.5	1.0
Iron(mg/L)	<0.1	<0.1	<0.1	<0.1	0.3	No relaxation
Manganese(mg/L)	<0.04	<0.04	<0.04	<0.04	0.1	0.3
Copper(mg/L)	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	<0.04	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.02	<0.02	<0.01	<0.01	0.01	No relaxation
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.003	No relaxation

Indian Drinking Standards (IS-10500):2012



**PIEZOMETER WATER QUALITY  
MONITORING**

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## 10. PIEZOMETER WATER QUALITY DATA

Table:230

Area	Project	Name of the Station	Date of Activity	Ground Water level (meter below ground level)
Basundhara	Basundhara (W) OCP	Piezometer No MIP 13	01-Nov-19	Borehole jammed
		Piezometer No MIP 15	01-Nov-19	1.85
		Piezometer No MIP 16	01-Nov-19	2.2
		Piezometer No MIP 17	01-Nov-19	5.5
		Piezometer No MIP 16	01-Nov-19	2.2
		Piezometer No MIP 15	05-May-20	7.1
		Piezometer No MIP 16	05-May-20	18
		Piezometer No MIP 17	05-May-20	12
	Kulda OCP	Piezometer No MIP 01	01-Nov-19	6.63
		Piezometer No MIP 11	01-Nov-19	8.81
		Piezometer No MIP 12	01-Nov-19	1.8
		Piezometer No MIP 14	01-Nov-19	57.13
		Piezometer No MIP 11	03-May-20	14
		Piezometer No MIP 01	05-May-20	11
		Piezometer No MIP 12	05-May-20	55
		Piezometer No MIP 14	05-May-20	2.18
Ib valley	Lajkura OCP	Piezometer No MIP 02	01-Nov-19	25.42
		Piezometer No MIP 02	14-May-20	30
Lakhanpur	Belpahar OCP	Piezometer No MIP 07	01-Nov-19	4.56
		Piezometer No MIP 08	01-Nov-19	2.55
		Piezometer No MIP 08	13-May-20	6.1
		Piezometer No MIP 07	19-May-20	7.2
	Lakhanpur OCP	Piezometer No MIP 09	01-Nov-19	5.5
		Piezometer No MIP 10	01-Nov-19	10.94
		Piezometer No MIP 10	02-May-20	15
	Lilari OCP	Piezometer No MIP 09	14-May-20	8
		Piezometer No MIP 06	01-Nov-19	13
	Orinet	Orient Mine No. 1 & 2	Piezometer No MIP 03	01-Nov-19
Piezometer No MIP 03			02-May-20	7.16
Orient Mine No. 3		Piezometer No MIP 05	13-May-20	35
		Piezometer No MIP 05	01-Nov-19	19.47
Samaleswari OCP		Piezometer No MIP 04	01-Nov-19	3.82



# TOTAL SUSPENDED SOLIDS IN WATER MONITORING

## 11. TSS MONITORING DATA

Table:231

**Area:** IB-Valley

**Project:** Lajkura

**Monitoring Station:** Mine Sump

Date of Sampling	TSS (mg/L)
15-Jul-19	32
27-Jul-19	36
14-Aug-19	30
30-Aug-19	38
13-09-2019	43
30-09-2019	45

Table:232

**Area:** IB-Valley

**Project:** Lajkura

**Monitoring Station:** Surface Pond

Date of Sampling	TSS (mg/L)
15-Jul-19	58
27-Jul-19	64
14-Aug-19	54
30-Aug-19	21
13-09-2019	40
30-09-2019	39



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Table:233

**Area:** Basundhara - Garjanbahal

**Project:** Basundhara (W) OCP

**Monitoring Station:** 100 m upstream of the point in Basundhara nalla near Sardega Village

Date of Sampling	TSS (mg/L)
27-Apr-2019	96
27-Jul-19	40
27-Aug-2019	50
30-Sep-2019	25
15-Oct-19	36
6-Nov-19	30
11-Jan-20	48

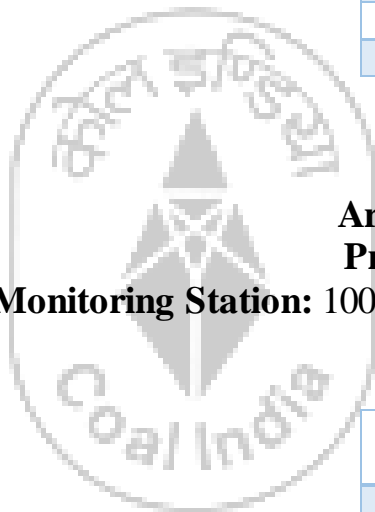
Table:234

**Area:** Basundhara - Garjanbahal

**Project:** Basundhara (W) OCP

**Monitoring Station:** 100 m downstream of the point in Basundhara nalla near Sardega Village

Date of Sampling	TSS (mg/L)
27-04-2019	127
27-Jul-19	40
27-08-2019	58
30-09-2019	30
15-Oct-19	36
6-Nov-19	36
11-Jan-20	32





# HEAVY METAL ANALYSIS

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## 12. HEAVY METAL ANALYSIS

Table: 235

<i>Project</i>	<i>Samleswari OCP</i>						<i>Standard</i>
<i>Monitoring Station</i>	<i>Units</i>	Roof of Project Office, SOCP	Near Re-Joice Club in Hill Top Colony	Near Kudopali	Lajkura Village	Jamkani Village	
<i>Date of sampling</i>		07-Mar-2020	07-Mar-2020	11-Mar-2020	11-Mar-2020	11-Mar-2020	
<i>Arsenic (As)</i>	(ng/m <sup>3</sup> )	<1.0	<1.0	<1.0	<1.0	<1.0	<i>6.0(Annual)</i>
<i>Nickel (Ni)</i>	(ng/m <sup>3</sup> )	<1.0	<1.0	<1.0	<1.0	<1.0	<i>20(Annual)</i>
<i>Chromium (Cr)</i>	(µg/m <sup>3</sup> )	<0.1	<0.1	<0.1	<0.1	<0.1	
<i>Cadmium (Cd)</i>	(µg/m <sup>3</sup> )	<0.1	<0.1	<0.1	<0.1	<0.1	

*Out of NABL*

Table: 236

<i>Project</i>	<i>Lajkura OCP</i>					<i>Standard</i>
<i>Monitoring Station</i>	<i>Units</i>	Near Project Office	Near South Coal Stock	Near Baghmara Nala	Near Adarsh Nagar Colony	
<i>Date of sampling</i>		06-Mar-20	06-Mar-20	06-Mar-20	06-Mar-20	
<i>Arsenic (As)</i>	(ng/m <sup>3</sup> )	<1.0	<1.0	<1.0	<1.0	<i>6.0(Annual)</i>
<i>Nickel (Ni)</i>	(ng/m <sup>3</sup> )	<1.0	<1.0	<1.0	<1.0	<i>20(Annual)</i>
<i>Chromium (Cr)</i>	(µg/m <sup>3</sup> )	<0.1	<0.1	<0.1	<0.1	
<i>Cadmium (Cd)</i>	(µg/m <sup>3</sup> )	<0.1	<0.1	<0.1	<0.1	

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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table: 237

<i>Project</i>		<b>Lilari OCP</b>	<b>Lakhanpur OCP</b>		<i>Standard</i>
<i>Monitoring Station</i>	<i>Units</i>	South East of Mine	South of Quarry 5	Near East of Quarry 1	
<i>Date of sampling</i>		11-Mar-2020	13-Mar-2020	13-Mar-2020	
<i>Arsenic (As)</i>	(ng/m <sup>3</sup> )	<1.0	<1.0	<1.0	<b>6.0(Annual)</b>
<i>Nickel (Ni)</i>	(ng/m <sup>3</sup> )	<1.0	<1.0	<1.0	<b>20(Annual)</b>
<i>Chromium (Cr)</i>	(µg/m <sup>3</sup> )	<0.1	<0.1	<0.1	
<i>Cadmium (Cd)</i>	(µg/m <sup>3</sup> )	<0.1	<0.1	<0.1	

*Out of NABL*

Table: 238

<i>Project</i>	<b>Belpahar OCP</b>			
<i>Monitoring Station</i>	<i>Units</i>	South West of Mine	Near Workshop	<i>Standard</i>
<i>Date of sampling</i>		12-Mar-2020	12-Mar-2020	
<i>Arsenic (As)</i>	(ng/m <sup>3</sup> )	<1.0	<1.0	<b>6.0(Annual)</b>
<i>Nickel (Ni)</i>	(ng/m <sup>3</sup> )	<1.0	<1.0	<b>20(Annual)</b>
<i>Chromium (Cr)</i>	(µg/m <sup>3</sup> )	<0.1	<0.1	
<i>Cadmium (Cd)</i>	(µg/m <sup>3</sup> )	<0.1	<0.1	

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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table: 239

<i>Project</i>	<b>Kulda OCP</b>					<i>Standard</i>
<i>Monitoring Station</i>	<i>Units</i>	KUL 1 - External CT Road	KUL2 - West of Working Face/Near Tumulia	KUL 3-South of Working Face/Near Karlikachhar	KUL 4 - North of CHP/Kushra	
<i>Date of sampling</i>		02-Mar-2020	02-Mar-2020	02-Mar-2020	02-Mar-2020	
<i>Lead (Pb)</i>	( $\mu\text{g}/\text{m}^3$ )	<0.1	<0.1	<0.1	<0.1	<i>1.0(24hours)</i>
<i>Arsenic (As)</i>	( $\text{ng}/\text{m}^3$ )	<1.0	<1.0	<1.0	<1.0	<i>6.0(Annual)</i>
<i>Nickel (Ni)</i>	( $\text{ng}/\text{m}^3$ )	<1.0	<1.0	<1.0	<1.0	<i>20(Annual)</i>
<i>Chromium (Cr)</i>	( $\mu\text{g}/\text{m}^3$ )	<0.1	<0.1	<0.1	<0.1	
<i>Cadmium (Cd)</i>	( $\mu\text{g}/\text{m}^3$ )	<0.1	<0.1	<0.1	<0.1	



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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table: 240

<i>Project</i>	<b>Garjanbahal OCP</b>							<i>Standard</i>
<i>Monitoring Station</i>	<i>Units</i>	GOCP 1- Kushra	GOCP 2 - Karlikachhar	GOCP 3 - 220 kV Substation	GOCP 4 - Barpali	GOCP 5 - Duduka Village	KAN 1- Near Coal Sampling Lab	
<i>Date of sampling</i>		02- Mar- 2020	02-Mar- 2020	05-Mar- 2020	02-Mar- 2020	06-Mar- 2020	05-Mar- 2020	
<i>Lead (Pb)</i>	( $\mu\text{g}/\text{m}^3$ )	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<b>1.0(24hours)</b>
<i>Arsenic (As)</i>	( $\text{ng}/\text{m}^3$ )	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<b>6.0(Annual)</b>
<i>Nickel (Ni)</i>	( $\text{ng}/\text{m}^3$ )	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<b>20(Annual)</b>
<i>Chromium (Cr)</i>	( $\mu\text{g}/\text{m}^3$ )	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
<i>Cadmium (Cd)</i>	( $\mu\text{g}/\text{m}^3$ )	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	

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ANNUAL ENVIRONMENTAL MONITORING REPORT, IB VALLEY (MCL)

Table: 241

<i>Project</i>	<b>Basundhara OCP</b>							<i>Standard</i>
<b>Monitoring Station</b>	<b>Units</b>	A1-Near Internal Dump & CT Road of Basundhara (W) OCP/Siarimal	A2-Near Internal Dump & CT Road of Basundhara (W) OCP/Go palpur	A3-Near Sardega Railway Siding	A4-Sardega Siding and Coal Stocks	A5-Near Coal Stock of Basundhara (W) OCP	A6-CHP, CT Road	
<b>Date of sampling</b>		03-Mar-2020	03-Mar-2020	03-Mar-2020	03-Mar-2020	04-Mar-2020	04-Mar-2020	
<b>Arsenic (As)</b>	(ng/m <sup>3</sup> )	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<b>6.0(Annual)</b>
<b>Nickel (Ni)</b>	(ng/m <sup>3</sup> )	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<b>20(Annual)</b>
<b>Chromium (Cr)</b>	(µg/m <sup>3</sup> )	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>Cadmium (Cd)</b>	(µg/m <sup>3</sup> )	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	

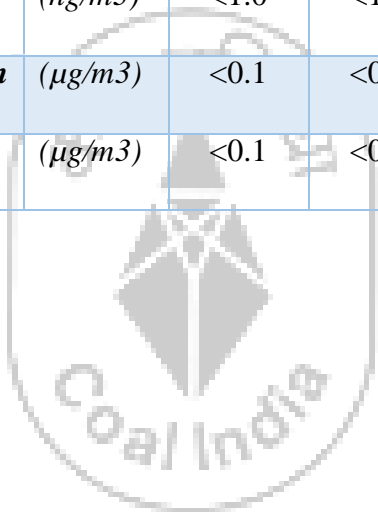
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<i>Project</i>		<b>Orient Mine no. 2</b>		<b>Orient Mine no. 3</b>	<b>Orient Mine no. 4</b>	<b>HBI Mine</b>			<i>Standard</i>
<i>Monitoring Station</i>	<i>Units</i>	Orient Mine no. 2	Near Adarsh Nagar Colony	Orient Mine No. 3	Orient Mine No. 4	HBI Mine	Bundia Colony Pump House	Rampur Officers Guest House	
<i>Date of sampling</i>		06-Mar-20	06-Mar-2020	06-Mar-2020	05-Mar-2020	07-Mar-2020	07-Mar-2020	07-Mar-2020	
<i>Arsenic (As)</i>	(ng/m3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<i>6.0(Annual)</i>
<i>Nickel (Ni)</i>	(ng/m3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<i>20(Annual)</i>
<i>Chromium (Cr)</i>	(µg/m3)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
<i>Cadmium (Cd)</i>	(µg/m3)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	



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*cmpdi  
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