

# **ENVIRONMENTAL STATEMENT 2018-19**

**PURNADIH OPENCAST  
PROJECT**

**N K AREA, DAKRA**

**September, 2019**



**CENTRAL COALFIELDS  
LIMITED  
ENVIRONMENT DIVISION  
Ranchi**



## EXECUTIVE - SUMMARY

### 1.0 BACKGROUND

Purnadih Opencast project of Central Coalfield Ltd. is situated in Tandwa block of Chatra District of Jharkhand State. The rated capacity for Purnadih OCP has been planned for a 3.0 MTPA nominal capacity and 3.45 MTPA Peak capacity of ROM coal. Project report for this project has been prepared by RI –III, CMPDI, Ranchi. The mineable reserve has been estimated as 57.50 M.Tes corresponding to a volume of OBR of 110.66 M.m3 at an average stripping ratio of 1.75 m3/Te.

The project produced 2.42 MT of coal during the year 2018-19. A comprehensive Environmental Management Plan (EMP) for this project (3.0 MTPA), formulated by RI-III of CMPDI, was approved by the MOEF in Oct. 2009 vide letter no. J-11015/126/2007-IA.II(M) dated 05.10.2009. This report is prepared with a view to fulfill the statutory obligations laid down by the Ministry of Environment & Forest.

### 2.0 FINDINGS:

Environmental Statement report reveals the following facts regarding environmental aspect of this project

- i) The concentration of SO<sub>2</sub>, NO<sub>x</sub> and CO in ambient air in core zone is well within the permissible limits.
- ii) The concentration of SPM in core zone is within permissible limits at all sampling stations.
- iii) The quality of sump water at the disposal point is meeting the prescribed standards with respect to all parameters.
- iv) The noise level in the core and buffer zone is not crossing the threshold value of 75 dB (A)
- v) At present, the entire volume of OB generated is being reutilized for back – filling.
- vi) The volume of waste water generated from the colony is 150m<sup>3</sup>/day.
- vii) No hazardous waste material is being produced either from any process or any pollution control facilities.
- viii) Plantation in 7.40 ha of land has been carried out in monsoon 2018



### SUMMARISED DATA

1. Production capacity : 3.00 MTY
2. Mineable Reserve : 57.50 MT
3. Total Volume of O.B. : 110.66 M m<sup>3</sup>
4. Average Stripping Ratio : 1.75 m<sup>3</sup>/Te
5. Total land requirement : 751.750 Ha
6. Forest land requirement : 323.49 Ha (including safety zone)
7. Life of the Project : 25 Years
8. Average quality of coal : Grade-F
9. Total Average Rainfall / annum : 1160 mm
10. Temperature :
  - i. Maximum : 45 °c
  - ii. Minimum : 04 °c
11. Predominant Wind Direction and Av. Wind Velocity : South to North, 5.2 Km/hr
12. Magnitude of waste generated
  - i. Waste water discharge from
    - a. Colony : 150 m<sup>3</sup>/day
    - b. Workshop : Nil
    - c. Mine : Nil
  - ii. Solid Waste.
    - a. Top Soil :
    - b. O.B. : 2.78 million m<sup>3</sup>



**ENVIRONMENT STATEMENT FOR THE FINANCIAL YEAR ENDING 31ST  
MARCH 2019**

**PART-A**

**I. Name and Address of the mine**

NAME	: PURNADIH OPENCAST PROJECT
POST	: NAWADIH
DISTT.	: CHATRA, JHARKHAND

**II. INDUSTRY CATEGORY** : PRIMARY

**III. Date of last Environmental Statement  
Report submitted** : Sept-2018

**IV. PRODUCTION CAPACITY** : 3.00 MTY

**V. YEAR OF STARTING** : 2009



## PART - B

### WATER AND RAW MATERIAL CONSUMPTION

#### 1. WATER CONSUMPTION (cu.m/day)

##### a. Mining

i. Haul road dust suppression	:	75 m <sup>3</sup> /Day
ii. Workshop	:	27 m <sup>3</sup> /Day
iii. Fire Fighting	:	30 m <sup>3</sup> /Day
iv. Others (Service building etc.)	:	Nil m <sup>3</sup> /Day

##### b. Domestic

i. Colony	:	286 m <sup>3</sup> /Day
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Name of Product	Water Consumption per Unit of Product					
	Financial Year – 2018-19			Financial Year – 2017-18		
	Production (MT)	Industrial (m <sup>3</sup> /Te)	Domestic (m <sup>3</sup> /Te)	Production (MT)	Industrial (m <sup>3</sup> /Te)	Domestic (m <sup>3</sup> /Te)
ROM Coal	2.42	0.0197	0.0426	2.52	0.019	0.041

#### 2. RAW MATERIAL CONSUMPTION:

Name of Products	Name of Raw Material	Consumption of Raw Material (per unit of output)	
		Financial Year – 2018-19	Financial Year – 2017-18
ROM Coal	POL	0.88 lt/cum	0.87 lt/cum
	Explosives	Coal: 0.255 kg/te OB: 0.37 kg/m <sup>3</sup>	Coal: 0.25 kg/te OB: 0.37 kg/m <sup>3</sup>



## **PART - C**

### **POLLUTION DISCHARGED TO ENVIRONMENT/UNIT OF OUTPUT (PARAMETERS SPECIFIED IN THE CONSENT ISSUED)**

<b>Pollutants</b>	<b>Quantity of pollutants generated</b>	<b>Percentage variation from prescribed standards with reasons</b>
<b>Water</b>		
a) Discharged from Mine	NIL	
b) Workshop Effluent	NIL	
c) Domestic Discharged	150 cu.m/day	Not applicable
<b>Air</b>		
The SPM, SO <sub>2</sub> and NO <sub>x</sub> are main pollutants generated From coal mining project.	The quantity of air pollutants from mine is difficult to measure. However concentrations of air Pollutants are measurable and are given in Annexure.	The results of air pollutants are under prescribed limits.
<b>Noise</b>		
Operation of HEMMs generated noise	Recorded noise levels are placed as Annexure.	The noise level in and around the project is under the prescribed limits.

## **PART - D**

### **HAZARDOUS WASTES**

**(As specified under Hazardous Waste Management and Handling Rules, 1989)**

<b>Hazardous Wastes</b>	<b>Total Quantity</b>	
	<b>Financial Year – 2018-19</b>	<b>Financial Year – 2017-18</b>
a) From Mining Process	NIL	NIL
b) From Pollution control facilities	NIL	NIL



## PART - E

### SOLID WASTES

Description of Solid Waste	Total quantity of solid waste generated in (Million m <sup>3</sup> )	
	Financial Year – 2018-19	Financial Year – 2017-18
a) From mining process - i. Top Soil ii. Overburden	2.78	3.32
b) From pollution control facilities		NIL
c) Quantity recycled or reutilized	The entire volume of Over burden remove during the process of coal winning is reutilized for back filling	

## PART - F

**PLEASE SPECIFY THE CHARACTERISTICS (IN TERMS OF CONCENTRATION AND QUANTUM) OF HAZARDOUS AS WELL AS SOLID WASTES AND INDICATE THE DISPOSAL PRACTICE ADOPTED FOR BOTH THESE CATEGORIES OF WASTES**

Hazardous wastes are not being produced either from mining operation or from any pollution control facilities. During opencast mining, overburden and top soil are produced as solid wastes temporarily as these materials are used for land reclamation. During the year 2017-18, 3.22 million cubic meter of overburden was generated.

The overburden consists of the following constituents:

1. Soil
2. Shale, sandy shale (including carbonaceous shale)
3. Alternate bands of shale and sand stone
4. Sand stone

### DISPOSAL PRACTICE

The entire overburden generated will be used for back filling. In order to control soil erosion from external dumps, foot drains (4x2) m has been provided to collect water flowing down the dump and carry it to the sedimentation lagoon. On the river side, the dump surface has been pitched with stone and boulder. Plantation has been done on some part of the dump and remaining part is being planted.



## **PART - G**

### **IMPACT OF POLLUTION CONTROL MEASURES ON CONSERVATION OF NATURAL RESOURCES AND CONSEQUENTLY ON COST OF PRODUCTION**

In order to carry out mining in an eco-friendly manner, following pollution control measures have been implemented.

#### **1.0 ANTI AIR POLLUTION MEASURES**

The following measures have been taken to control air pollution:

- i) Regular sprinkling of water on haul roads and other roads.
- ii) Wetting of ROM coal before crushing in Feeder Breaker.
- iii) Water sprinkling on coal stock.
- iv) Plantation on OB dumps on 9.10 Ha by Forest Department to be done in monsoon 2017.
- v) Plantation on 7.40 Ha land by Forest Department to be done in monsoon 2018.
- vi) Blasting is done during congenial atmosphere.
- vii) An alternate coal transport road has been proposed due to removal of exiting causeway on Damodar river along with two numbers mobile water sprinklers.

#### **2.0 ANTI WATER POLLUTION MEASURES**

The following measures have been taken to control water pollution from the mine:

- i) The mine water is pumped into a Sedimentation Pond from where it is pumped for reuse. Some portions of mine water are also used for haul road dust suppression.
- ii) The catch drains has been constructed around the foot of the O.B. dumps in order to collect surface runoff water from the dumps and convey them to the settling ponds.
- iii) Proposed Oil & Grease trap along with in the new workshop.

#### **3.0. ANTI NOISE POLLUTION MEASURES**

- i) Blasting operation is carried out between 12.30 PM to 3.00 PM.
- ii) Result of noise monitoring; reveal that the noise level is well below well below the prescribed limit.



#### **4.0. MEASURES FOR RECLAMATION OF LAND**

Overburden generated during mining is being dumped into decoaled area. After the completion of the backfilling operation, it is proposed to start technical and biological reclamation of the internal dumps. At the end of mining operation, some decoaled area will remain empty, which would be used for storing rain water. The presence of such a water body will help in increasing the moisture content of soil of adjacent area and ultimately it would promote the growth of vegetation.

#### **PART - H**

#### **ADDITIONAL INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT OF POLLUTION**

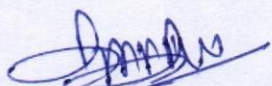

In future, investment will be made in following heads for further improvement of environment around the project :

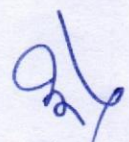
- i. The plantation will be done over vacant space within the mine leasehold boundary.
- ii. Scheme will be prepared adjacent to mine boundary for Damodar River Action Plan.

#### **PART - I**

#### **ANY OTHER PARTICULARS IN RESPECT OF ENVIRONMENTAL PROTECTION AND ABATEMENT OF POLLUTION**

A comprehensive Environmental Management Plan (EMP) was prepared by Regional Institute - III of CMPDI. It was approved by MOEF vide letter No. J-11015/36/2007 – IA.II(M) dated 19.05.2009. The implementation of the EMP is under progress and the same is also reviewed from time to time. The regular monitoring of the ambient air and water quality is being done in and around core zone and the quarterly monitoring report is submitted to the Jharkhand State Pollution Control Board, Ranchi and Ministry of Environment & Forest, New Delhi

  
Environment Officer  
Purnadih OCP  
NK Area  


  
Project Officer  
Purnadih OCP  
NK Area



WILLIAMSON COUNTY

Know all men that I, the undersigned, for and in behalf of the Board of Supervisors of Williamson County, Tennessee, have caused this Resolution to be signed by me as Chairman of said Board, and sealed with the official seal of said Board, and have caused the same to be attested by the undersigned, and have caused the same to be published in the official newspaper of said County, to wit: the [illegible] of [illegible] County, Tennessee, on the [illegible] day of [illegible], A.D. 19[illegible].

IN WITNESS WHEREOF, I have hereunto set my hand and the seal of said Board, at [illegible], Tennessee, this [illegible] day of [illegible], A.D. 19[illegible].

CHAS. E. [illegible]  
Chairman of Board of Supervisors

19[illegible]

Attest:  
[illegible]  
[illegible]  
[illegible]

Dec 7

W. H. [illegible]



**TEST REPORT**

06/18 Test Report No. 2230	Job No. 094318021	Year	FY2018-19
Type of Sample	Ambient Air	Quarter Ending	Jun-18
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000, R -2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

Area : North Karanpura

Project: Purnadih OCP

Stations: Manager Office

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters ( in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10}$ + $>\text{PM}_{10}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
Apr-18 1st FN	09/04/18-10/04/18	17/04/18	17/04/18-24/04/18	310	113	60	< 25	< 6	East Sunny
Apr-18 2nd FN	23/04/18-24/04/18	02/05/18	02/05/18-07/05/18	321	150	70	< 25	< 6	East Sunny
May-18 3rd FN	08/05/18-09/05/18	16/05/18	16/05/18-21/05/18	326	125	61	< 25	< 6	East Sunny
May-18 4th FN	24/05/18-25/05/18	01/06/18	01/06/18-06/06/18	169	64	30	< 25	< 6	East Sunny
Jun-18 5th FN	10/06/18-11/06/18	18/06/18	18/06/18-25/06/18	180	65	31	< 25	< 6	East Sunny
Jun-18 6th FN	24/06/18-25/06/18	02/07/18	02/07/18-06/07/18	170	58	32	< 25	< 6	West Cloud

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000 is enclosed along for reference applicable in core zone.
2. Gazette Notification no. G.S.R 826 (E) dt.Nov.'2009 is enclosed for reference applicable in buffer zone.

\*Out of NABL scope.







**TEST REPORT**

06/18 Test Report No. 2231	Job No. 094318021	Year	FY2018-19
Type of Sample	Ambient Air	Quarter Ending	Jun-18
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000, R -2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura **Project:** Purnadih OCP **Stations:** Demdua Village

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters (in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10} + >\text{PM}_{2.5}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
Apr-18 1st FN	09/04/18-10/04/18	17/04/18	17/04/18-24/04/18	312	164	68	< 25	< 6	East Sunny
Apr-18 2nd FN	23/04/18-24/04/18	02/05/18	02/05/18-07/05/18	236	126	67	< 25	< 6	East Sunny
May-18 3rd FN	08/05/18-09/05/18	16/05/18	16/05/18-21/05/18	280	153	62	< 25	< 6	East Sunny
May-18 4th FN	24/05/18-25/05/18	01/06/18	01/06/18-06/06/18	282	138	58	< 25	< 6	East Sunny
Jun-18 5th FN	10/06/18-11/06/18	18/06/18	18/06/18-25/06/18	245	132	56	< 25	7	East Sunny
Jun-18 6th FN	24/06/18-25/06/18	02/07/18	02/07/18-06/07/18	237	138	63	< 25	< 6	East Rain

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000 is enclosed along for reference applicable in core zone.
  2. Gazette Notification no. G.S.R 826 (E) dt.Nov.'2009 is enclosed for reference applicable in buffer zone.
- \*Out of NABL scope.







**TEST REPORT**

<b>06/18 Test Report No. 2232</b>	<b>Job No. 094318021</b>	<b>Year</b>	<b>FY2018-19</b>
Type of Sample	Ambient Air	Quarter Ending	Jun-18
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000, R -2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura      **Project:** Purnadih OCP      **Stations:** Kutki Village

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters (in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10} + >\text{PM}_{10}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
<b>Apr-18 1st FN</b>	09/04/18-10/04/18	17/04/18	17/04/18-24/04/18	312	164	68	< 25	< 6	East Sunny
<b>Apr-18 2nd FN</b>	23/04/18-24/04/18	02/05/18	02/05/18-07/05/18	236	126	67	< 25	< 6	East Sunny
<b>May-18 3rd FN</b>	08/05/18-09/05/18	16/05/18	16/05/18-21/05/18	280	153	62	< 25	< 6	East Sunny
<b>May-18 4th FN</b>	24/05/18-25/05/18	01/06/18	01/06/18-06/06/18	282	138	58	< 25	< 6	East Sunny
<b>Jun-18 5th FN</b>	10/06/18-11/06/18	18/06/18	18/06/18-25/06/18	245	132	56	< 25	7	East Sunny
<b>Jun-18 6th FN</b>	24/06/18-25/06/18	02/07/18	02/07/18-06/07/18	237	138	63	< 25	< 6	East Rain

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000 is enclosed along for reference applicable in core zone.
2. Gazette Notification no. G.S.R 826 (E) dt.Nov.'2009 is enclosed for reference applicable in buffer zone.

\*Out of NABL scope.



**TEST REPORT**

06/18 Test Report No. 2233	Job No. 094318021	Year	FY2018-19
Type of Sample	Ambient Air	Quarter Ending	Jun-18
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000 ,R -2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura

**Project:** Purnadih OCP

**Stations:** Koilara Village

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters ( in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10}$ + $\text{PM}_{10}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
Apr-18 1st FN	08/04/18-09/04/18	18/04/18	18/04/18-24/04/18	131	64	33	< 25	< 6	West Sunny
Apr-18 2nd FN	30/04/18-01/05/18	02/05/18	02/05/18-07/05/18	188	64	29	< 25	< 6	West Cloud
May-18 3rd FN	09/05/18-10/05/18	16/05/18	16/05/18-21/05/18	296	98	55	< 25	< 6	East Sunny
May-18 4th FN	24/05/18-25/05/18	01/06/18	01/06/18-07/06/18	194	60	36	< 25	< 6	East Sunny
Jun-18 5th FN	09/06/18-10/06/18	18/06/18	18/06/18-25/06/18	183	63	28	< 25	< 6	East Rain
Jun-18 6th FN	29/06/18-30/06/18	02/07/18	02/07/18-05/07/18	151	57	27	< 25	< 6	East Sunny

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept. '2000 is enclosed along for reference applicable in core zone.
2. Gazette Notification no. G.S.R 826 (E) dt.Nov. '2009 is enclosed for reference applicable in buffer zone.

\*Out of NABL scope.



**TEST REPORT**

<b>06/18 Test Report No. 2234</b>	<b>Job No. 094318021</b>	<b>Year</b>	<b>FY2018-19</b>
Type of Sample:	Noise	Quarter Ending	Jun-18
Customer	CCL		
Testing Protocol:	<i>The noise pollution (Regulation and Control), Rules, 2000</i>		
Remarks:			

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** **North Karanpura** **Project:** **Purnadih OCP**

Station Name	Noise Level					
	Apr-18 1st FN	Apr-18 2nd FN	May-18 3rd FN	May-18 4th FN	Jun-18 5th FN	Jun-18 6th FN
Date of recording	07/04/18	29/04/18	08/05/18	23/05/18	08/06/18	28/06/18
<b>Manager Office</b>	52.6	51.8	48.7	50.3	50.7	47.3
Date of recording	07/04/18	29/04/18	08/05/18	23/05/18	08/06/18	29/06/18
<b>Demdua Village</b>	50.2	45.8	44.9	49.4	49.2	46.2
Date of recording	07/04/18	29/04/18	08/05/18	23/05/18	08/06/18	29/06/18
<b>Kutki Village</b>	50.1	45.6	45.2	49.2	49.3	46.3
Date of recording	08/04/18	30/04/18	09/05/18	24/05/18	09/06/18	29/06/18
<b>Koilara Village</b>	50.3	45.1	46.1	49.6	49.5	45.7

Ambient Air Quality Standards in respect of Noise as per 'The noise pollution (Regulation and Control), Rules, 2000		
Time Frame	Limits in dB(A) Leq	
	Day Time 6.00 AM to 10.00 PM	Night Time 10.00 PM to 6.00 AM
Industrial Area	75	70
Commercial Area	65	55
Residential area	55	45
Silence Zone	50	40



**TEST REPORT**

06/18 Test Report No. 2235	Job No. 094318021	Year	FY2018-19
Type of Sample:	Effluent Water	Quarter Ending	Jun-18
Customer	CCL		
Mode of Receipt of Sample:	Jointly picked up sample by laboratory at quarterly interval		
Testing Protocol:	MOEF -SCH-VI STANDARDS, Class 'a'		
Remarks & Observation:	Samples received in 2 ltr plastic Jerri cane, Colour as observed is transparent		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura    **Project:** Purnadih OCP    **Stations:** Mine water Discharge

Analysis Results of FN Effluent Water							
Parameters →				COD	O & G	pH value	TSS
Detection Limit				4	2	0.2	10
MOEF -SCH-VI, STANDARDS, Class 'A'				250	10	5.5 to 9.0	100
Month	Date of Sampling	Date of Receipt of Sample	Date of Analysis	Value in mg/l, except pH			
Apr-18 1st FN	07/04/18	18/04/18	18/04/18-02/05/18	60	<2.00	7.97	68
Apr-18 2nd FN	30/04/18	02/05/18	02/05/18-26/05/18	28	<2.00	7.75	32
May-18 3rd FN	08/05/18	16/05/18	16/05/18-09/06/18	44	<2.00	7.49	52
May-18 4th FN	22/05/18	01/06/18	01/06/18-22/06/18	44	<2.00	7.85	22
Jun-18 5th FN	09/06/18	18/06/18	18/06/18-30/06/18	20	<2.00	8.14	26
Jun-18 6th FN	30/06/18	02/07/18	02/07/18-10/07/18	44	<2.00	7.11	26
BIS Standard & Method				APHA, 22 <sup>nd</sup> Edition, Closed Reflux, Titrimetric	IS 3025/39:1991, R : 2003, Partition Gravimetric	IS-3025/11:1983, R-1996, Electrometric	IS 3025/17:1984, R :1996, Gravimetric



**TEST REPORT**

06/18 Test Report No. 2236	Job No. 094318021	Year	FY2018-19
Type of Sample:	Surface Water	Quarter Ending	Jun-18
Customer	CCL	Date of Receipt:	17/04/18
Mode of Receipt of Sample:	Jointly picked up sample by laboratory at quarterly interval	Date of Analysis:	17.04.18-13.07.18
Testing Protocol:	-	Date of Reporting:	13/07/18
Remarks & Observation:	Samples received in 2 ltr plastic Jerri cane, Colour as observed is transparent		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura  
**Stations:**

1. Damodar River U/S of the Project
2. Damodar River D/S of the Project
3. Damodar Near Jamdih Bridge

**Project:** Purandih OCP  
**Date of Sampling:**  
07/04/18  
07/04/18  
07/04/18

Sl.No	Parameter	Sampling Stations				Detection Limit	BIS Standard & Method
		1	2	3	4		
1	Arsenic (as As), mg/l, Max	<0.002	<0.002	<0.002		0.002	IS 3025/37:1988 R : 2003, AAS-VGA
2	BOD (3 days 27°C), mg/l, Max	2	2	2		2.00	IS 3025 /44: 1993, R : 2003 3 day incubation at 27°C
3	Cadmium(as Cd), mg/l, Max	<0.0005	<0.0005	<0.0005		0.0005	APHA, 22 <sup>nd</sup> Edition AAS-GTA
4	Chlorides (as Cl), mg/l, Max	30	14	14		2.00	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03	<0.03	<0.03		0.03	IS 3025 /42 : 1992 R : 2009, AAS-Flame
6	Dissolved Oxygen, min.	6.3	6.3	6.3		0.10	IS 3025/38:1989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	0.58	0.84	0.82		0.02	APHA, 22 <sup>nd</sup> Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01	<0.01	<0.01		0.01	APHA, 22 <sup>nd</sup> Edition, 1.5 Diphenylcarbohydrazide
9	Iron (as Fe), mg/l, Max	<0.02	<0.02	<0.02		0.06	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
10	Lead (as Pb), mg/l, Max	<0.005	<0.005	<0.005		0.005	APHA, 22 <sup>nd</sup> Edition AAS-GTA
11	Nitrate (as NO <sub>3</sub> ), mg/l, Max	1.86	1.20	1.15		0.50	APHA, 22 <sup>nd</sup> Edition, UV- Spectrophotometric
12	pH value	8.16	7.66	7.89		0.2	IS-3025/11:1983, R-1996, Electrometric
13	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, Max	<0.001	<0.001	<0.001		0.001	APHA, 22 <sup>nd</sup> Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002	<0.002	<0.002		0.002	APHA, 22 <sup>nd</sup> Edition AAS-GTA
15	Sulphate (as SO <sub>4</sub> ) mg/l, Max	75	116	114		2.00	APHA, 22 <sup>nd</sup> Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	258	374	372		25.00	IS 3025 /16:1984 R : 2006, Gravimetric
17	Total Suspended Solids, mg/l, Max	30	22	24		10.00	IS 3025 /17:1984, R :1996, Gravimetric
18	Zinc (as Zn), mg/l, Max	<0.01	<0.01	<0.01		0.01	IS 3025 /49 : 1994, R : 2009, AAS-Flame

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**TEST REPORT**

06/18 Test Report No. 2237	Job No. 094318021	Year	FY2018-19
Type of Sample:	Drinking Water	Quarter Ending	Jun-18
Customer	CCL	Date of Receipt:	17/04/18
Mode of Receipt of Sample:	Jointly picked up sample by laboratory at quarterly interval	Date of Analysis:	17.04.18-13.07.18
Testing Protocol:	IS:10500 Drinking Water Standards	Date of Reporting:	13/07/18
Remarks & Observation:	Samples received in 2 ltr plastic Jerri cane, Colour as observed is transparent		

**TEST RESULT**

The sample has been tested with the following results:-

Area :

North Karanpura

Project:

Purnadih OCP

Stations:

1. Hand Pump, Tumang Village

Date of Sampling:

07/04/18

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Standards	Standard / Test Method
		1	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22 <sup>nd</sup> Edition, Carmine
2	Cadmium (as Cd), mg/l, Max	<0.0005			0.0005	0.003	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
3	Calcium (as Ca), mg/l, Max	54.5			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	20			2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03			0.03	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	1.02			0.02	1.0	APHA, 22 <sup>nd</sup> Edition, SPADNS
7	Free Residual Chlorine, mg/l, Min	0.02			0.02	0.2	APHA, 22 <sup>nd</sup> Edition, DPD
8	Iron (as Fe), mg/l, Max	<0.02			0.06	0.3	IS 3025 /53 : 2003, R : 2009, AAS-Flame
9	Lead (as Pb), mg/l, Max	<0.005			0.005	0.01	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
10	Manganese (as Mn), mg/l, Max	<0.06			0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nickel (as Ni), mg/l, Max	<0.01			0.01	0.02	IS-3025/54:2003, AAS-Flame
12	Nitrate (as NO <sub>3</sub> ), mg/l, Max	4.21			0.5	45	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
13	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
14	pH value	7.91			0.2	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
15	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, Max	<0.001			0.001	0.001	APHA, 22 <sup>nd</sup> Edition, 4-Amino Antipyrine
16	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
17	Sulphate (as SO <sub>4</sub> ) mg/l, Max	193			2.00	200	APHA, 22 <sup>nd</sup> Edition, Turbidity
18	Total Alkalinity (CaCO <sub>3</sub> ), mg/l, Max	92			4.00	200	IS-3025/23:1986, Titration
19	Total Arsenic (as As), mg/l, Max	<0.002			0.002	0.01	IS 3025/ 37:1988 R : 2003, AAS-VGA
20	Total Chromium (as Cr), mg/l, Max	0.19			0.04	0.05	IS-3025/52:2003, AAS-Flame
21	Total Dissolved Solids, mg/l, Max	446			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (CaCO <sub>3</sub> ), mg/l, Max	224			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	0.8			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	<0.01			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

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**TEST REPORT**

09/18 Test Report No. 2231	Job No. 094318021	Year	FY2018-19
Type of Sample	Ambient Air	Quarter Ending	Sep-18
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000 ,R -2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

Area : North Karanpura

Project: Purnadih OCP

Stations: Manager Office

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters ( in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10} + >\text{PM}_{10}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
Jul-18 1st FN	09/07/18-10/07/18	16/07/18	16/07/18-20/07/18	240	89	51	< 25	< 6	East Sunny
Jul-18 2nd FN	23/07/18-24/07/18	01/08/18	01/08/18-07/08/18	122	58	27	< 25	< 6	East Rain
Aug-18 3rd FN	09/08/18-10/08/18	16/08/18	16/08/18-23/08/18	173	70	41	< 25	< 6	East Rain
Aug-18 4th FN	23/08/18-24/08/18	03/09/18	03/09/18-08/09/18	143	64	32	< 25	< 6	East Cloud
Sep-18 5th FN	09/09/18-10/09/18	17/09/18	17/09/18-24/09/18	156	70	37	< 25	< 6	East Rain
Sep-18 6th FN	24/09/18-25/09/18	01/10/18	01/10/18-08/10/18	270	125	56	< 25	< 6	East Sunny

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept. '2000 is enclosed along for reference applicable in core zone.
2. Gazette Notification no. G.S.R 826 (E) dt.Nov.'2009 is enclosed for reference applicable in buffer zone.

\*Out of NABL scope.



**TEST REPORT**

09/18 Test Report No. 2232	Job No. 094318021	Year	FY2018-19
Type of Sample	Ambient Air	Quarter Ending	Sep-18
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000, R -2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura      **Project:** Purnadih OCP      **Stations:** Dembua Village

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters ( in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10} + >\text{PM}_{10}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
Jul-18 1st FN	09/07/18-10/07/18	16/07/18	16/07/18-20/07/18	226	120	40	< 25	< 6	East Sunny
Jul-18 2nd FN	23/07/18-24/07/18	01/08/18	01/08/18-07/08/18	317	182	80	< 25	< 6	East Rain
Aug-18 3rd FN	08/08/18-09/08/18	16/08/18	16/08/18-23/08/18	226	118	60	< 25	< 6	East Rain
Aug-18 4th FN	23/08/18-24/08/18	03/09/18	03/09/18-08/09/18	245	125	58	< 25	< 6	East Cloud
Sep-18 5th FN	09/09/18-10/09/18	17/09/18	17/09/18-24/09/18	335	194	77	< 25	< 6	East Rain
Sep-18 6th FN	24/09/18-25/09/18	01/10/18	01/10/18-08/10/18	243	141	67	< 25	< 6	East Sunny

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000 is enclosed along for reference applicable in core zone.
  2. Gazette Notification no. G.S.R 826 (E) dt.Nov.'2009 is enclosed for reference applicable in buffer zone.
- \*Out of NABL scope.



**TEST REPORT**

09/18 Test Report No. 2233	Job No. 094318021	Year	FY2018-19
Type of Sample	Ambient Air	Quarter Ending	Sep-18
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000, R-2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura **Project:** Purnadih OCP **Stations:** Kutki Village

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters ( in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10} + >\text{PM}_{10}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
Jul-18 1st FN	09/07/18-10/07/18	16/07/18	16/07/18-20/07/18	226	120	40	< 25	< 6	East Sunny
Jul-18 2nd FN	23/07/18-24/07/18	01/08/18	01/08/18-07/08/18	317	182	80	< 25	< 6	East Rain
Aug-18 3rd FN	08/08/18-09/08/18	16/08/18	16/08/18-23/08/18	226	118	60	< 25	< 6	East Rain
Aug-18 4th FN	23/08/18-24/08/18	03/09/18	03/09/18-08/09/18	245	125	58	< 25	< 6	East Cloud
Sep-18 5th FN	09/09/18-10/09/18	17/09/18	17/09/18-24/09/18	335	194	77	< 25	< 6	East Rain
Sep-18 6th FN	24/09/18-25/09/18	01/10/18	01/10/18-08/10/18	243	141	67	< 25	< 6	East Sunny

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept. '2000 is enclosed along for reference applicable in core zone.
  2. Gazette Notification no. G.S.R 826 (E) dt.Nov. '2009 is enclosed for reference applicable in buffer zone.
- \*Out of NABL scope.



**TEST REPORT**

<b>09/18 Test Report No. 2234</b>	<b>Job No. 094318021</b>	<b>Year</b>	<b>FY2018-19</b>
Type of Sample	Ambient Air	Quarter Ending	Sep-18
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000, R-2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura      **Project:** Purnadih OCP      **Stations:** Koilara Village

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters ( in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10} + >\text{PM}_{10}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
<b>Jul-18 1st FN</b>	08/07/18-09/07/18	16/07/18	16/07/18-20/07/17	153	60	33	< 25	< 6	East Cloud
<b>Jul-18 2nd FN</b>	30/07/18-31/07/18	01/08/18	01/08/18-06/08/18	180	76	43	< 25	< 6	West Rain
<b>Aug-18 3rd FN</b>	12/08/18-13/08/18	16/08/18	16/08/18-21/08/18	118	45	24	< 25	< 6	East Sunny
<b>Aug-18 4th FN</b>	28/08/18-29/08/18	03/09/18	03/09/18-08/09/18	156	52	27	< 25	< 6	East Cloud
<b>Sep-18 5th FN</b>	08/09/18-09/09/18	17/09/18	17/09/18-22/09/18	122	57	29	< 25	< 6	East Cloud
<b>Sep-18 6th FN</b>	23/09/18-24/09/18	01/10/18	01/10/18-06/10/18	302	118	58	< 25	< 6	East Cloud

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000 is enclosed along for reference applicable in core zone.
2. Gazette Notification no. G.S.R 826 (E) dt.Nov.'2009 is enclosed for reference applicable in buffer zone.

\*Out of NABL scope.



**TEST REPORT**

09/18 Test Report No. 2235	Job No. 094318021	Year	FY2018-19
Type of Sample:	Noise	Quarter Ending	Sep-18
Customer	CCL		
Testing Protocol:	'The noise pollution (Regulation and Control), Rules, 2000		
Remarks:			

**TEST RESULT**

The sample has been tested with the following results:-

Area : North Karanpura Project: Purnadih OCP

Station Name	Noise Level					
	Jul-18 1st FN	Jul-18 2nd FN	Aug-18 3rd FN	Aug-18 4th FN	Sep-18 5th FN	Sep-18 6th FN
Date of recording	07/07/18	29/07/18	11/08/18	28/08/18	07/09/18	23/09/18
Manager Office	53.1	49.2	51.4	53.6	52.7	50.3
Date of recording	07/07/18	30/07/18	12/08/18	28/08/18	07/09/18	23/09/18
Dembua Village	50.2	51.5	46.2	50.4	50.3	47.1
Date of recording	07/07/18	30/07/18	12/08/18	28/08/18	07/09/18	23/09/18
Kutki Village	50.4	51.7	45.9	50.2	51.1	49.3
Date of recording	08/07/18	30/07/18	12/08/18	28/08/18	08/09/18	23/09/18
Koilara Village	50.1	51.9	45.7	50.3	51.2	47.5

Ambient Air Quality Standards in respect of Noise as per 'The noise pollution (Regulation and Control), Rules, 2000		
Time Frame	Limits in dB(A) Leq	
	Day Time 6.00 AM to 10.00 PM	Night Time 10.00 PM to 6.00 AM
Industrial Area	75	70
Commercial Area	65	55
Residential area	55	45
Silence Zone	50	40

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**TEST REPORT**

09/18 Test Report No. 2236	Job No. 094318021	Year	FY2018-19
Type of Sample:	Effluent Water	Quarter Ending	Sep-18
Customer	CCL		
Mode of Receipt of Sample:	Jointly picked up sample by laboratory at quarterly interval		
Testing Protocol:	MOEF -SCH-VI STANDARDS, Class 'a'		
Remarks & Observation:	Samples received in 2 ltr plastic Jerri cane, Colour as observed is transparent		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura      **Project:** Purnadih OCP      **Stations:** Mine water Discharge

Analysis Results of FN Effluent Water							
Parameters →				COD	O & G	pH value	TSS
Detection Limit				4	2	0.2	10
MOEF -SCH-VI, STANDARDS, Class 'A'				250	10	5.5 to 9.0	100
Month	Date of Sampling	Date of Receipt of Sample	Date of Analysis	Value in mg/l, except pH			
Jul-18 1st FN	08/07/18	16/07/18	16/07/18-03/08/18	24	<2.00	7.85	22
Jul-18 2nd FN	31/07/18	01/08/18	01/08/18-20/08/18	92	<2.00	7.8	52
Aug-18 3rd FN	14/08/18	16/08/18	16/08/18-03/08/18	24	<2.00	7.5	28
Aug-18 4th FN	29/08/18	03/09/18	03/09/18-18/03/18	40	<2.00	7.94	24
Sep-18 5th FN	09/09/18	17/09/18	17/09/18-08/10/18	36	<2.00	7.76	92
Sep-18 6th FN	24/09/18	01/10/18	01/10/18-15/10/18	24	<2.00	7.86	22
BIS Standard & Method				APHA, 22 <sup>nd</sup> Edition, Closed Reflux, Titrimetric	IS 3025/39:1991, R : 2003, Partition Gravimetric	IS-3025/11:1983, R-1996, Electrometric	IS 3025/17:1984, R :1996, Gravimetric



**TEST REPORT**

09/18 Test Report No. 2237	Job No. 094318021	Year	FY2018-19
Type of Sample:	Surface Water	Quarter Ending	Sep-18
Customer	CCL	Date of Receipt:	16/07/18
Mode of Receipt of Sample:	Jointly picked up sample by laboratory at quarterly interval	Date of Analysis:	16.07.18-14.09.18
Testing Protocol:	-		
Remarks & Observation:	Samples received in 2 ltr plastic Jerri cane, Colour as observed is transparent		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura  
**Stations:**

**Project:** Purandih OCP  
**Date of Sampling:**

- |                                     |          |
|-------------------------------------|----------|
| 1. Damodar River U/S of the Project | 08/07/18 |
| 2. Damodar River D/S of the Project | 08/07/18 |
| 3. Damodar Near Jamdih Bridge       | 08/07/18 |

Sl.No	Parameter	Sampling Stations				Detection Limit	BIS Standard & Method
		1	2	3	4		
1	Arsenic (as As), mg/l, Max	<0.002	<0.002	<0.002		0.002	IS 3025/37:1988 R : 2003, AAS-VGA
2	BOD (3 days 27°C), mg/l, Max	2	2	2		2.00	IS 3025 /44: 1993, R : 2003 3 day incubation at 27°C
3	Cadmium(as Cd), mg/l, Max	<0.0005	<0.0005	<0.0005		0.0005	APHA, 22 <sup>nd</sup> Edition AAS-GTA
4	Chlorides (as Cl), mg/l, Max	14	12	12		2.00	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	0.04	<0.03	<0.03		0.03	IS 3025 /42 : 1992 R : 2009, AAS-Flame
6	Dissolved Oxygen, min.	6.3	6.3	6.3		0.10	IS 3025/38:1989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	0.27	0.37	0.2		0.02	APHA, 22 <sup>nd</sup> Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01	<0.01	<0.01		0.01	APHA, 22 <sup>nd</sup> Edition, 1,5 - Diphenylcarbohydrazide
9	Iron (as Fe), mg/l, Max	3.67	1.82	6.9		0.06	IS 3025 /53 : 2003, R : 2009, AAS-Flame
10	Lead (as Pb), mg/l, Max	<0.005	<0.005	<0.005		0.005	APHA, 22 <sup>nd</sup> Edition AAS-GTA
11	Nitrate (as NO <sub>3</sub> ), mg/l, Max	2.84	0.40	0.80		0.50	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
12	pH value	8.23	7.59	7.85		0.2	IS-3025/11:1983, R-1996, Electrometric
13	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, Max	<0.001	<0.001	<0.001		0.001	APHA, 22 <sup>nd</sup> Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002	<0.002	<0.002		0.002	APHA, 22 <sup>nd</sup> Edition AAS-GTA
15	Sulphate (as SO <sub>4</sub> ) mg/l, Max	13	14	12		2.00	APHA, 22 <sup>nd</sup> Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	124	94	88		25.00	IS 3025 /16:1984 R : 2006, Gravimetric
17	Total Suspended Solids, mg/l, Max	24	26	28		10.00	IS 3025 /17:1984, R :1996, Gravimetric
18	Zinc (as Zn), mg/l, Max	0.03	0.04	0.06		0.01	IS 3025 /49 : 1994, R : 2009, AAS-Flame

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Dy. Technical Manager  
Env. Lab., CMPDI(HQ)



**TEST REPORT**

<b>09/18 Test Report No. 2238</b>	<b>Job No. 094318021</b>	<b>Year</b>	<b>FY2018-19</b>
Type of Sample:	<b>Drinking Water</b>	Quarter Ending	Sep-18
Customer	CCL	Date of Receipt:	16/07/18
Mode of Receipt of Sample:	Jointly picked up sample by laboratory at quarterly interval	Date of Analysis:	16.07.18-14.09.18
Testing Protocol:	<b>IS:10500 Drinking Water Standards</b>		
Remarks & Observation:	Samples received in 2 ltr plastic Jerri cane, Colour as observed is transparent		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura

**Project:** Purnadih OCP

**Stations:**

**Date of Sampling:**

1. Hand Pump, Tumang Village

08/07/18

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Standards	Standard / Test Method
		1	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22 <sup>nd</sup> Edition, Carmine
2	Cadmium (as Cd), mg/l, Max	<0.0005			0.0005	0.003	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
3	Calcium (as Ca), mg/l, Max	73.6			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	60			2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03			0.03	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.63			0.02	1.0	APHA, 22 <sup>nd</sup> Edition, SPADNS
7	Free Residual Chlorine, mg/l, Min	<0.02			0.02	0.2	APHA, 22 <sup>nd</sup> Edition, DPD
8	Iron (as Fe), mg/l, Max	<0.06			0.06	0.3	IS 3025 / 53 : 2003, R : 2009, AAS-Flame
9	Lead (as Pb), mg/l, Max	<0.005			0.005	0.01	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
10	Manganese (as Mn), mg/l, Max	<0.02			0.02	0.1	IS-3025/59:2006,AAS-Flame
11	Nickel (as Ni), mg/l, Max	<0.01			0.01	0.02	IS-3025/54:2003, AAS-Flame
12	Nitrate (as NO <sub>3</sub> ), mg/l, Max	36.33			0.5	45	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
13	Odour	Agreeable			Qualitative	Agreeable	IS 3025 / 05:1983, R-2012, Qualitative
14	pH value	7.16			0.2	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
15	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, Max	<0.001			0.001	0.001	APHA, 22 <sup>nd</sup> Edition, 4-Amino Antipyrine
16	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
17	Sulphate (as SO <sub>4</sub> ) mg/l, Max	72			2.00	200	APHA, 22 <sup>nd</sup> Edition, Turbidity
18	Total Alkalinity (CaCO <sub>3</sub> ), mg/l, Max	140			4.00	200	IS-3025/23:1986, Titration
19	Total Arsenic (as As), mg/l, Max	<0.002			0.002	0.01	IS 3025/ 37:1988 R : 2003, AAS-VGA
20	Total Chromium (as Cr), mg/l, Max	0.14			0.04	0.05	IS-3025/52:2003, AAS-Flame
21	Total Dissolved Solids, mg/l, Max	498			25.00	500	IS 3025 / 16:1984 R : 2006, Gravimetric
22	Total Hardness (CaCO <sub>3</sub> ), mg/l, Max	316			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	1			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.02			0.01	5.0	IS 3025 / 49 : 1994, R : 2009, AAS-Flame

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4) This is computer generated report and requires no signature.

Dy. Technical Manager  
Env. Lab., CMPDI(HQ)



**TEST REPORT**

12/18 Test Report No. 2233	Job No. 094318021	Year	FY2018-19
Type of Sample	Ambient Air	Quarter Ending	Dec-18
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000, R -2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura

**Project:** Purnadih OCP

**Stations:** Manager Office

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters (in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10} + >\text{PM}_{10}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
Oct-18 1st FN	09/10/18-10/10/18	15/10/18	15/10/18-24/10/18	294	92	54	< 25	< 6	East Sunny
Oct-18 2nd FN	29/10/18-30/10/18	31/10/18	31/10/18-09/11/18	132	58	28	< 25	< 6	East Sunny
Nov-18 3rd FN	13/11/18-14/11/18	16/11/18	16/11/18-25/11/18	346	125	59	< 25	< 6	East Sunny
Nov-18 4th FN	27/11/18-28/11/18	03/12/18	03/12/18-12/12/18	187	59	39	< 25	< 6	East Sunny
Dec-18 5th FN	09/12/18-10/12/18	17/12/18	17/12/18-26/12/18	133	40	26	< 25	< 6	#REF!
Dec-18 6th FN	29/12/18-30/12/18	01/01/19	01/01/19-10/01/19	287	90	55	< 25	< 6	East Sunny

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept. '2000 is enclosed along for reference applicable in core zone.
2. Gazette Notification no. G.S.R 826 (E) dt.Nov.'2009 is enclosed for reference applicable in buffer zone.

\*Out of NABL scope.



**TEST REPORT**

<b>12/18 Test Report No. 2234</b>	<b>Job No. 094318021</b>	<b>Year</b>	<b>FY2018-19</b>
Type of Sample	Ambient Air	Quarter Ending	Dec-18
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000, R -2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura **Project:** Purnadih OCP **Stations:** Dembua Village

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters ( in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10} + >\text{PM}_{10}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
<b>Oct-18 1st FN</b>	09/10/18-10/10/18	15/10/18	15/10/18-24/10/18	262	131	54	< 25	< 6	East Sunny
<b>Oct-18 2nd FN</b>	29/10/18-30/10/18	31/10/18	31/10/18-09/11/18	274	164	69	< 25	< 6	East Sunny
<b>Nov-18 3rd FN</b>	13/11/18-14/11/18	16/11/18	16/11/18-25/11/18	380	168	72	< 25	< 6	East Sunny
<b>Nov-18 4th FN</b>	27/11/18-28/11/18	03/12/18	03/12/18-12/12/18	526	235	80	< 25	< 6	East Sunny
<b>Dec-18 5th FN</b>	09/12/18-10/12/18	17/12/18	17/12/18-26/12/18	431	198	67	< 25	< 6	East Sunny
<b>Dec-18 6th FN</b>	29/12/18-30/12/18	01/01/19	01/01/19-10/01/19	247	88	36	< 25	< 6	East Sunny

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept. '2000 is enclosed along for reference applicable in core zone.
  2. Gazette Notification no. G.S.R 826 (E) dt.Nov. '2009 is enclosed for reference applicable in buffer zone.
- \*Out of NABL scope.



**TEST REPORT**

12/18 Test Report No. 2235	Job No. 094318021	Year	FY2018-19
Type of Sample	Ambient Air	Quarter Ending	Dec-18
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000, R -2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura **Project:** Purnadih OCP **Stations:** Kutki Village

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters ( in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10} + >\text{PM}_{10}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
Oct-18 1st FN	09/10/18-10/10/18	15/10/18	15/10/18-24/10/18	262	131	54	< 25	< 6	East Sunny
Oct-18 2nd FN	29/10/18-30/10/18	31/10/18	31/10/18-09/11/18	274	164	69	< 25	< 6	East Sunny
Nov-18 3rd FN	13/11/18-14/11/18	16/11/18	16/11/18-25/11/18	380	168	72	< 25	< 6	East Sunny
Nov-18 4th FN	27/11/18-28/11/18	03/12/18	03/12/18-12/12/18	526	235	80	< 25	< 6	East Sunny
Dec-18 5th FN	09/12/18-10/12/18	17/12/18	17/12/18-26/12/18	431	198	67	< 25	< 6	East Sunny
Dec-18 6th FN	29/12/18-30/12/18	01/01/19	01/01/19-10/01/19	247	88	36	< 25	< 6	East Sunny

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept. '2000 is enclosed along for reference applicable in core zone.
2. Gazette Notification no. G.S.R 826 (E) dt.Nov. '2009 is enclosed for reference applicable in buffer zone.

\*Out of NABL scope.



**TEST REPORT**

<b>12/18 Test Report No. 2236</b>	<b>Job No. 094318021</b>	<b>Year</b>	<b>FY2018-19</b>
Type of Sample	Ambient Air	Quarter Ending	Dec-18
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000 ,R -2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura

**Project:** Purnadih OCP

**Stations:** Koilara Village

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters ( in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10} + >\text{PM}_{10}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
<b>Oct-18 1st FN</b>	07/10/18-08/10/18	15/10/18	15/10/18-24/10/18	270	97	56	< 25	< 6	East Sunny
<b>Oct-18 2nd FN</b>	25/10/18-26/10/18	31/10/18	31/10/18-09/11/18	154	58	26	< 25	< 6	East Sunny
<b>Nov-18 3rd FN</b>	15/11/18-16/11/18	16/11/18	16/11/18-25/11/18	221	85	40	< 25	< 6	East Sunny
<b>Nov-18 4th FN</b>	29/11/18-30/11/18	03/12/18	03/12/18-12/12/18	294	98	58	< 25	< 6	East Sunny
<b>Dec-18 5th FN</b>	15/12/18-16/12/18	17/12/18	17/12/18-26/12/18	248	82	44	< 25	< 6	East Sunny
<b>Dec-18 6th FN</b>	24/12/18-25/12/18	01/01/19	01/01/19-10/01/19	251	77	43	< 25	< 6	West Sunny

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept. '2000 is enclosed along for reference applicable in core zone.
  2. Gazette Notification no. G.S.R 826 (E) dt.Nov. '2009 is enclosed for reference applicable in buffer zone.
- \*Out of NABL scope.



**TEST REPORT**

12/18 Test Report No. 2237	Job No. 094318021	Year	FY2018-19
Type of Sample:	Noise	Quarter Ending	Dec-18
Customer	CCL		
Testing Protocol:	'The noise pollution (Regulation and Control), Rules, 2000		
Remarks:			

**TEST RESULT**

The sample has been tested with the following results:-

Area : North Karanpura Project: Purnadih OCP

Station Name	Noise Level					
	Oct-18 1st FN	Oct-18 2nd FN	Nov-18 3rd FN	Nov-18 4th FN	Dec-18 5th FN	Dec-18 6th FN
Date of recording	06/10/18	24/10/18	14/11/18	29/11/18	14/12/18	23/12/18
<b>Manager Office</b>	54.3	53.2	47.2	50.3	51.3	51.4
Date of recording	06/10/18	25/10/18	14/11/18	29/11/18	14/12/18	23/12/18
<b>Dembua Village</b>	48.4	52.3	46.1	46.2	45.3	46.2
Date of recording	06/10/18	25/10/18	14/11/18	29/11/18	14/12/18	23/12/18
<b>Kutki Village</b>	49.1	52.4	45.6	45.3	46.1	45.4
Date of recording	07/10/18	25/10/18	15/11/18	30/11/18	15/12/18	24/12/18
<b>Koilara Village</b>	47.2	52.2	45.4	45.7	45.9	45.5

Ambient Air Quality Standards in respect of Noise as per 'The noise pollution (Regulation and Control), Rules, 2000		
Time Frame	Limits in dB(A) Leq	
	Day Time 6.00 AM to 10.00 PM	Night Time 10.00 PM to 6.00 AM
Industrial Area	75	70
Commercial Area	65	55
Residential area	55	45
Silence Zone	50	40

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**TEST REPORT**

12/18 Test Report No. 2238	Job No. 094318021	Year	FY2018-19
Type of Sample:	Effluent Water	Quarter Ending	Dec-18
Customer	CCL		
Mode of Receipt of Sample:	Jointly picked up sample by laboratory at quarterly interval		
Testing Protocol:	MOEF -SCH-VI STANDARDS, Class 'a'		
Remarks & Observation:	Samples received in 2 ltr plastic Jerri cane, Colour as observed is transparent		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura      **Project:** Purnadih OCP      **Stations:** Mine water Discharge

Analysis Results of FN Effluent Water							
Parameters →				COD	O & G	pH value	TSS
Detection Limit				4	2	0.2	10
MOEF -SCH-VI, STANDARDS, Class 'A'				250	10	5.5 to 9.0	100
Month	Date of Sampling	Date of Receipt of Sample	Date of Analysis	Value in mg/l, except pH			
Oct-18 1st FN	07/10/18	15/10/18	15/10/18-08/11/18	52	<2.00	8.11	24
Oct-18 2nd FN	25/10/18	31/10/18	31/10/18-24/11/18	40	<2.00	7.78	52
Nov-18 3rd FN	15/11/18	16/11/18	16/11/18-30/11/18	48	<2.00	7.97	62
Nov-18 4th FN	29/11/18	03/12/18	03/12/18-17/12/18	44	<2.00	8.38	24
Dec-18 5th FN	13/12/18	17/12/18	17/12/18-04/01/19	24	<2.00	8.26	28
Dec-18 6th FN	00/01/00	00/01/00	00/01/00-00/01/00	0	0	0	0
BIS Standard & Method				APHA, 22 <sup>nd</sup> Edition, Closed Reflux, Titrimetric	IS 3025/39:1991, R : 2003, Partition Gravimetric	IS-3025/11:1983, R-1996, Electrometric	IS 3025/17:1984, R :1996, Gravimetric

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**TEST REPORT**

12/18 Test Report No. 2239	Job No. 094318021	Year	2018-19
Type of Sample:	Effluent Water	Quarter Ending	Dec.'18
Customer / W. O. no. & Date:	CCL	Date of Receipt of Sample:	01.01.19
Mode of Receipt of Sample:	Picked up sample by laboratory	Date of Analysis:	01.01.19-04.02.19
Testing Protocol:	MOEF -SCH-VI STANDARDS, Class 'a'	Date of Reporting:	04.02.19
Remarks & Observation:	Samples received in 2 ltr plastic Jerri cane, Colour as observed is transparent		

**TEST RESULT**

The sample has been tested with the following results:-

Area :  
Stations:

North Karanpura  
1. Mine Water Discharge

Project: Purnadih OCP  
Date of Sampling:  
24/12/2018

Sl.No.	Parameter	Sampling Stations			Detection Limit	MOEF -SCH-VI STANDARDS Class 'A'	BIS Standard & Method
		1					
1	Ammonical Nitrogen, mg/l, Max	0.10			0.02	50.0	IS 3025/34:1988, R : 2009, Nessler's
2	Arsenic (as As), mg/l, Max	<0.002			0.002	0.2	IS 3025/37:1988 R : 2003, AAS-VGA
3	B.O.D (3 days 27°C), mg/l, Max	2.00			2.00	30.0	IS 3025/44:1993.R:2003 3 day incubation at 27°C
4	Cadmium(as Cd), mg/l, Max	<0.0005			0.0005	2.0	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
5	COD, mg/l, Max	20			4.00	250.0	APHA, 22 <sup>nd</sup> Edition, Closed Reflux, Titrimetric
6	Copper (as Cu), mg/l, Max	0.03			0.03	3.0	IS 3025/42: 1992 R : 2009, AAS-Flame
7	Dissolved Phosphate, mg/l, Max	0.37			0.30	5.0	APHA, 22 <sup>nd</sup> Edition Molybdo vanadate
8	Fluoride (as F) mg/l, Max	0.48			0.02	2.0	APHA, 22 <sup>nd</sup> Edition, SPADNS
9	Free Ammonia, mg/l, Max	<0.02			0.02	5.0	IS:3025/34:1988, Nessler's
10	Hexavalent Chromium, mg/l, Max	<0.01			0.01	0.1	APHA, 22 <sup>nd</sup> Edition, Diphenylcarbohydrazide
11	Iron (as Fe), mg/l, Max	<0.06			0.06	3.0	IS 3025/53 : 2003, R : 2009, AAS-Flame
12	Lead (as Pb), mg/l, Max	<0.005			0.005	0.1	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
13	Manganese(as Mn), mg/l, Max	2.00			0.02	2.0	IS-3025/59:2006, AAS-Flame
14	Nickel (as Ni), mg/l, Max	0.06			0.01	3.0	IS-3025/54:2003, AAS-Flame
15	Nitrate Nitrogen, mg/l, Max	0.50			0.50	10.0	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
16	Oil & Grease, mg/l, Max	<2.00			2.00	10.0	IS 3025/39:1991, R : 2003, Partition Gravimetric
17	pH value	6.13			0.2	5.5 to 9.0	IS-3025/11:1983, R-1996, Electrometric
18	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH),mg/l, Max	<0.001			0.001	1.0	APHA, 22 <sup>nd</sup> Edition 4-Amino Antipyrine
19	Selenium (as Se), mg/l, Max	<0.002			0.002	0.05	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
20	Sulphide (as SO <sub>3</sub> ), mg/l, Max	<0.005			0.005	2.0	APHA, 22 <sup>nd</sup> Edition Methylene Blue
21	Temperature (°C)	24.2			Shall not exceed 5° C above the receiving temp.		IS-3025/09:1984, Thermometric
22	Total Chromium (as Cr), mg/l, Max	<0.04			0.04	2.0	IS-3025/52:2003, AAS-Flame
23	Total Kjeldahl Nitrogen, mg/l, Max	<1.00			1.00	100.0	IS:3025/34:1988, Nessler's
24	Total Residual Chlorine, mg/l, Max	<0.02			0.02	1.0	APHA, 22 <sup>nd</sup> Edition, DPD
25	Total Suspended Solids, mg/l, Max	22			10.00	100.0	IS 3025/17:1984, R :1996, Gravimetric
26	Zinc (as Zn), mg/l, Max	0.32			0.01	5.0	IS 3025/49 : 1994, R : 2009, AAS-Flame

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**TEST REPORT**

12/18 Test Report No. 2240	Job No. 094318021	Year	FY2018-19
Type of Sample:	Surface Water	Quarter Ending	Dec-18
Customer	CCL	Date of Receipt:	15/10/18
Mode of Receipt of Sample:	Jointly picked up sample by laboratory at quarterly interval	Date of Analysis:	15.10.18-22.01.19
Testing Protocol:	-		
Remarks & Observation:	Samples received in 2 ltr plastic Jerri cane, Colour as observed is transparent		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura  
**Stations:**

**Project:** Purandih OCP  
**Date of Sampling:**

- |                                     |          |
|-------------------------------------|----------|
| 1. Damodar River U/S of the Project | 06/10/18 |
| 2. Damodar River D/S of the Project | 06/10/18 |
| 3. Damodar Near Jamdih Bridge       | 06/10/18 |

Sl.No	Parameter	Sampling Stations				Detection Limit	BIS Standard & Method
		1	2	3	4		
1	Arsenic (as As), mg/l, Max	<0.002	<0.002	<0.002		0.002	IS 3025/37:1988 R : 2003, AAS-VGA
2	BOD (3 days 27°C), mg/l, Max	2	2	2		2.00	IS 3025 /44: 1993, R : 2003 3 day incubation at 27°C
3	Cadmium(as Cd), mg/l, Max	<0.0005	<0.0005	<0.0005		0.0005	APHA, 22 <sup>nd</sup> Edition AAS-GTA
4	Chlorides (as Cl), mg/l, Max	14	14	12		2.00	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	0.04	<0.03	<0.03		0.03	IS 3025 /42 : 1992 R : 2009, AAS-Flame
6	Dissolved Oxygen, min.	6.3	6.3	6.3		0.10	IS 3025/38:1989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	0.36	0.5	0.42		0.02	APHA, 22 <sup>nd</sup> Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01	<0.01	<0.01		0.01	APHA, 22 <sup>nd</sup> Edition, 1,5 - Diphenylcarbohydrazide
9	Iron (as Fe), mg/l, Max	3.67	1.82	6.9		0.06	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
10	Lead (as Pb), mg/l, Max	<0.005	<0.005	<0.005		0.005	APHA, 22 <sup>nd</sup> Edition AAS-GTA
11	Nitrate (as NO <sub>3</sub> ), mg/l, Max	5.67	8.15	5.63		0.50	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
12	pH value	8.15	8.11	8.14		0.2	IS-3025/11:1983, R-1996, Electrometric
13	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, Max	<0.001	<0.001	<0.001		0.001	APHA, 22 <sup>nd</sup> Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002	<0.002	<0.002		0.002	APHA, 22 <sup>nd</sup> Edition AAS-GTA
15	Sulphate (as SO <sub>4</sub> ) mg/l, Max	10	46	10		2.00	APHA, 22 <sup>nd</sup> Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	132	170	136		25.00	IS 3025 /16:1984 R : 2006, Gravimetric
17	Total Suspended Solids, mg/l, Max	24	24	22		10.00	IS 3025 /17:1984, R :1996, Gravimetric
18	Zinc (as Zn), mg/l, Max	0.03	0.04	0.06		0.01	IS 3025 /49 : 1994, R : 2009, AAS-Flame

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**TEST REPORT**

12/18 Test Report No. 2241	Job No. 094318021	Year	FY2018-19
Type of Sample:	Drinking Water	Quarter Ending	Dec-18
Customer	CCL	Date of Receipt:	15/10/18
Mode of Receipt of Sample:	Jointly picked up sample by laboratory at quarterly interval	Date of Analysis:	15.10.18-22.01.19
Testing Protocol:	IS:10500 Drinking Water Standards		
Remarks & Observation:	Samples received in 2 ltr plastic Jerri cane. Colour as observed is transparent		

**TEST RESULT**

The sample has been tested with the following results:-

Area :

North Karanpura

Project:

Purnadih OCP

Stations:

1. Hand Pump, Tumang Village

Date of Sampling:

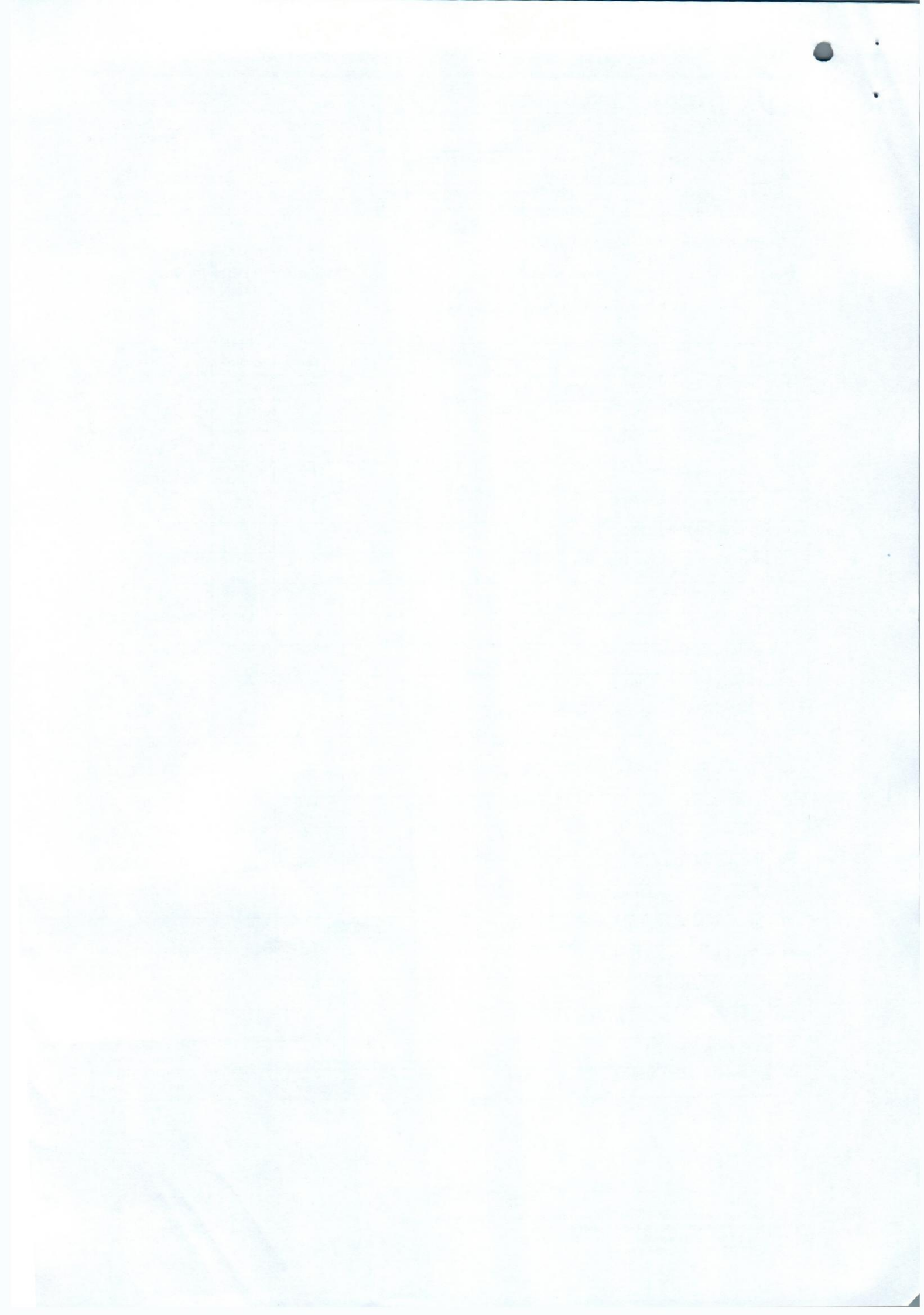
06/10/18

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Standards	Standard / Test Method
		1	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22 <sup>nd</sup> Edition, Carmine
2	Cadmium (as Cd), mg/l, Max	<0.0005			0.0005	0.003	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
3	Calcium (as Ca), mg/l, Max	51.2			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	78			2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03			0.03	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.42			0.02	1.0	APHA, 22 <sup>nd</sup> Edition, SPADNS
7	Free Residual Chlorine, mg/l, Min	<0.02			0.02	0.2	APHA, 22 <sup>nd</sup> Edition, DPD
8	Iron (as Fe), mg/l, Max	<0.06			0.06	0.3	IS 3025 /53 : 2003, R : 2009, AAS-Flame
9	Lead (as Pb), mg/l, Max	<0.005			0.005	0.01	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
10	Manganese (as Mn), mg/l, Max	<0.02			0.02	0.1	IS-3025/59:2006,AAS-Flame
11	Nickel (as Ni), mg/l, Max	<0.01			0.01	0.02	IS-3025/54:2003, AAS-Flame
12	Nitrate (as NO <sub>3</sub> ), mg/l, Max	139.37			0.5	45	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
13	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
14	pH value	8.16			0.2	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
15	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, Max	<0.001			0.001	0.001	APHA, 22 <sup>nd</sup> Edition, 4-Amino Antipyrine
16	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
17	Sulphate (as SO <sub>4</sub> ) mg/l, Max	29			2.00	200	APHA, 22 <sup>nd</sup> Edition, Turbidity
18	Total Alkalinity (CaCO <sub>3</sub> ), mg/l, Max	92			4.00	200	IS-3025/23:1986, Titration
19	Total Arsenic (as As), mg/l, Max	<0.002			0.002	0.01	IS 3025/ 37:1988 R : 2003, AAS-VGA
20	Total Chromium (as Cr), mg/l, Max	0.14			0.04	0.05	IS-3025/52:2003, AAS-Flame
21	Total Dissolved Solids, mg/l, Max	390			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (CaCO <sub>3</sub> ), mg/l, Max	216			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	2.2			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.02			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

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**TEST REPORT**

03/19 Test Report No. 2230	Job No. 094318021	Year	FY2018-19
Type of Sample	Ambient Air	Quarter Ending	Mar-19
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000 ,R -2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura

**Project:** Purnadih OCP

**Stations:** Manager Office

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters ( in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10} + >\text{PM}_{10}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
Jan-19 1st FN	12/01/19-13/01/19	16-01-2019	16/01/19-21/01/19	146	49	30	< 25	< 6	West Sunny
Jan-19 2nd FN	29/01/19-30/01/19	01-02-2019	01/02/19-06/02/19	184	56	32	< 25	< 6	East Sunny
Feb-19 3rd FN	13/02/19-14/02/19	18-02-2019	18/02/19-22/02/19	153	47	28	< 25	< 6	East Sunny
Feb-19 4th FN	27/02/19-28/02/19	01-03-2019	01/03/19-06/03/19	254	89	56	< 25	< 6	East Sunny
Mar-19 5th FN	13/03/19-14/03/19	18-03-2019	18/03/19-23/03/19	178	71	40	< 25	< 6	East Sunny
Mar-19 6th FN	27/03/19-28/03/19	01-04-2019	01/04/19-05/04/19	90	47	26	< 25	< 6	North Sunny

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000 is enclosed along for reference applicable in core zone.
2. Gazette Notification no. G.S.R 826 (E) dt.Nov.'2009 is enclosed for reference applicable in buffer zone.

\*Out of NABL scope.



**TEST REPORT**

03/19 Test Report No. 2231	Job No. 094318021	Year	FY2018-19
Type of Sample	Ambient Air	Quarter Ending	Mar-19
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000 ,R -2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura **Project:** Purnadih OCP **Stations:** Dembua Village

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters ( in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10} + >\text{PM}_{10}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
Jan-19 1st FN	12/01/19-13/01/19	16-01-2019	16/01/19-21/01/19	396	177	59	< 25	< 6	West Sunny
Jan-19 2nd FN	29/01/19-30/01/19	01-02-2019	01/02/19-06/02/19	517	242	88	< 25	< 6	East Sunny
Feb-19 3rd FN	13/02/19-14/02/19	18-02-2019	18/02/19-22/02/19	502	227	75	< 25	< 6	East Sunny
Feb-19 4th FN	26/02/19-27/02/19	01-03-2019	01/03/19-06/03/19	266	160	79	< 25	< 6	East Sunny
Mar-19 5th FN	13/03/19-14/03/19	18-03-2019	18/03/19-23/03/19	280	137	51	< 25	< 6	East Sunny
Mar-19 6th FN	27/03/19-28/03/19	01-04-2019	01/04/19-05/04/19	389	182	71	< 25	< 6	East Sunny

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000 is enclosed along for reference applicable in core zone.
  2. Gazette Notification no. G.S.R 826 (E) dt.Nov.'2009 is enclosed for reference applicable in buffer zone.
- \*Out of NABL scope.



**TEST REPORT**

03/19 Test Report No. 2232	Job No. 094318021	Year	FY2018-19
Type of Sample	Ambient Air	Quarter Ending	Mar-19
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000 ,R -2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura      **Project:** Purnadih OCP      **Stations:** Kutki Village

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters ( in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10} + >\text{PM}_{10}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
Jan-19 1st FN	12/01/19-13/01/19	16-01-2019	16/01/19-21/01/19	396	177	59	< 25	< 6	West Sunny
Jan-19 2nd FN	29/01/19-30/01/19	01-02-2019	01/02/19-06/02/19	517	242	88	< 25	< 6	East Sunny
Feb-19 3rd FN	13/02/19-14/02/19	18-02-2019	18/02/19-22/02/19	502	227	75	< 25	< 6	East Sunny
Feb-19 4th FN	26/02/19-27/02/19	01-03-2019	01/03/19-06/03/19	266	160	79	< 25	< 6	East Sunny
Mar-19 5th FN	13/03/19-14/03/19	18-03-2019	18/03/19-23/03/19	280	137	51	< 25	< 6	East Sunny
Mar-19 6th FN	27/03/19-28/03/19	01-04-2019	01/04/19-05/04/19	389	182	71	< 25	< 6	East Sunny

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000 is enclosed along for reference applicable in core zone.
  2. Gazette Notification no. G.S.R 826 (E) dt.Nov.'2009 is enclosed for reference applicable in buffer zone.
- \*Out of NABL scope.



**TEST REPORT**

03/19 Test Report No. 2233	Job No. 094318021	Year	FY2018-19
Type of Sample	Ambient Air	Quarter Ending	Mar-19
Customer	CCL		
Mode of Receipt of Sample:	Joint sampling with customer		
Sampling Protocol:	IS 5182 (part 14): 2000 ,R -2010, Methods for Measurement of Air Pollution		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura

**Project:** Purnadih OCP

**Stations:** Koilara Village

Month	Date of Sampling	Date of receipt of sample	Date of analysis	Parameters ( in $\mu\text{g}/\text{m}^3$ )					Wind Direction (from) & Weather
				*Total Particulate Matter ( $\text{PM}_{10} + >\text{PM}_{10}$ )TPM	Particulate Matter ( $\text{PM}_{10}$ )	*Particulate Matter ( $\text{PM}_{2.5}$ )	Sulphur Dioxide ( $\text{SO}_2$ )	Nitrogen Oxides (as $\text{NO}_2$ )	
Jan-19 1st FN	14/01/19-15/01/19	16-01-2019	16/01/19-21/01/19	318	108	62	< 25	< 6	East Sunny
Jan-19 2nd FN	23/01/19-24/01/19	01-02-2019	01/02/19-06/02/19	255	82	45	< 25	< 6	East Cloud
Feb-19 3rd FN	15/02/19-16/02/19	18-02-2019	18/02/19-22/02/19	250	79	43	< 25	< 6	East Sunny
Feb-19 4th FN	22/02/19-23/02/19	01-03-2019	01/03/19-06/03/19	254	83	47	< 25	< 6	East Sunny
Mar-19 5th FN	08/03/19-09/03/19	18-03-2019	18/03/19-23/03/19	318	125	65	< 25	< 6	East Sunny
Mar-19 6th FN	29/03/19-30/03/19	01-04-2019	01/04/19-05/04/19	257	86	49	< 25	< 6	East Sunny

**Note:**

1. Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000 is enclosed along for reference applicable in core zone.
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- \*Out of NABL scope.



**TEST REPORT**

03/19 Test Report No. 2234	Job No. 094318021	Year	FY2018-19
Type of Sample:	Noise	Quarter Ending	Mar-19
Customer	CCL		
Testing Protocol:	'The noise pollution (Regulation and Control), Rules, 2000		
Remarks:			

**TEST RESULT**

The sample has been tested with the following results:-

Area : North Karanpura Project: Purnadih OCP

Station Name	Noise Level					
	Jan-19 1st FN	Jan-19 2nd FN	Feb-19 3rd FN	Feb-19 4th FN	Mar-19 5th FN	Mar-19 6th FN
Date of recording	13-01-2019	22-01-2019	14-02-2019	22-02-2019	07-03-2019	29-03-2019
Manager Office	48.5	69.2	49.6	65.2	50.5	50.6
Date of recording	14-01-2019	22-01-2019	14-02-2019	22-02-2019	07-03-2019	29-03-2019
Dembua Village	45.3	49.5	48.6	49.3	46.1	51.5
Date of recording	14-01-2019	22-01-2019	14-02-2019	22-02-2019	07-03-2019	29-03-2019
Kutki Village	45.5	50.2	47.6	50.2	45.2	51.6
Date of recording	14-01-2019	23-01-2019	15-02-2019	22-02-2019	08-03-2019	29-03-2019
Koilara Village	45.4	51.1	48.1	51.5	45.5	52.3

Ambient Air Quality Standards in respect of Noise as per 'The noise pollution (Regulation and Control), Rules, 2000		
Time Frame	Limits in dB(A) Leq	
	Day Time 6.00 AM to 10.00 PM	Night Time 10.00 PM to 6.00 AM
Industrial Area	75	70
Commercial Area	65	55
Residential area	55	45
Silence Zone	50	40

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**TEST REPORT**

03/19 Test Report No. 2235	Job No. 094318021	Year	FY2018-19
Type of Sample:	Effluent Water	Quarter Ending	Mar-19
Customer	CCL		
Mode of Receipt of Sample:	Jointly picked up sample by laboratory at quarterly interval		
Testing Protocol:	MOEF -SCH-VI STANDARDS, Class 'a'		
Remarks & Observation:	Samples received in 2 ltr plastic Jerri cane, Colour as observed is transparent		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** North Karanpura    **Project:** Purnadih OCP    **Stations:** Mine water Discharge

Analysis Results of FN Effluent Water							
Parameters →				COD	O & G	pH value	TSS
Detection Limit				4	2	0.2	10
MOEF -SCH-VI, STANDARDS, Class 'A'				250	10	5.5 to 9.0	100
Month	Date of Sampling	Date of Receipt of Sample	Date of Analysis	Value in mg/l, except pH			
Jan-19 1st FN	14/01/19	16/01/19	16/01/19-05/02/19	24	<2.00	8.17	26
Jan-19 2nd FN	25/01/19	01/02/19	01/02/19-28/02/19	24	<2.00	7.82	28
Feb-19 3rd FN	15/02/19	18/02/19	18/02/19-16/03/19	40	<2.00	6.37	54
Feb-19 4th FN	22/02/19	01/03/19	01/03/19-23/03/19	24	<2.00	8.05	28
Mar-19 5th FN	08/03/19	18/03/19	18/03/19-03/04/19	44	<2.00	7.83	66
Mar-19 6th FN	30/03/19	01/04/19	01/04/19-15/04/19	24	<2.00	8.01	28
BIS Standard & Method				APHA, 22 <sup>nd</sup> Edition, Closed Reflux, Titrimetric	IS 3025/39:1991, R : 2003, Partition Gravimetric	IS-3025/11:1983, R-1996, Electrometric	IS 3025/17:1984, R :1996, Gravimetric

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**TEST REPORT**

03/19 Test Report No. 2236	Job No. 094318021	Year	FY2018-19
Type of Sample:	Surface Water	Quarter Ending	Mar-19
Customer	CCL	Date of Receipt:	16-01-2019
Mode of Receipt of Sample:	Jointly picked up sample by laboratory at quarterly interval	Date of Analysis:	16.01.19-20.02.19
Testing Protocol:	-		
Remarks & Observation:	Samples received in 2 ltr plastic Jerri can. Colour as observed is transparent		

**TEST RESULT**

The sample has been tested with the following results:-

Area : North Karanpura  
Stations:

Project: Purandih OCP  
Date of Sampling:

1. Damodar River U/S of the Project
2. Damodar River D/S of the Project
3. Damodar Near Jamdih Bridge

14-01-2019

14-01-2019

14-01-2019

Sl.No	Parameter	Sampling Stations				Detection Limit	BIS Standard & Method
		1	2	3	4		
1	Arsenic (as As), mg/l, Max	<0.002	<0.002	<0.002		0.002	IS 3025/37:1988 R : 2003, AAS-VGA
2	BOD (3 days 27°C), mg/l, Max	2.4	2.4	2.2		2.00	IS 3025 /44: 1993, R : 2003 3 day incubation at 27°C
3	Cadmium(as Cd), mg/l, Max	<0.0005	<0.0005	<0.0005		0.0005	APHA, 22 <sup>nd</sup> Edition AAS-GTA
4	Chlorides (as Cl), mg/l, Max	14	14	32		2.00	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03	<0.03	<0.03		0.03	IS 3025 /42 : 1992 R : 2009, AAS-Flame
6	Dissolved Oxygen, min.	6.3	6.3	6.3		0.10	IS 3025/38:1989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	0.91	1.07	1.28		0.02	APHA, 22 <sup>nd</sup> Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01	<0.01	<0.01		0.01	APHA, 22 <sup>nd</sup> Edition, 1,5 - Diphenylcarbohydrazide
9	Iron (as Fe), mg/l, Max	<0.06	<0.06	<0.06		0.06	IS 3025 /53 : 2003, R : 2009, AAS-Flame
10	Lead (as Pb), mg/l, Max	<0.005	<0.005	<0.005		0.005	APHA, 22 <sup>nd</sup> Edition AAS-GTA
11	Nitrate (as NO <sub>3</sub> ), mg/l, Max	8.02	7.44	20.78		0.50	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
12	pH value	8.1	8.12	8.17		0.2	IS-3025/11:1983, R-1996, Electrometric
13	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, Max	<0.001	<0.001	<0.001		0.001	APHA, 22 <sup>nd</sup> Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002	<0.002	<0.002		0.002	APHA, 22 <sup>nd</sup> Edition AAS-GTA
15	Sulphate (as SO <sub>4</sub> ) mg/l, Max	12	16	159		2.00	APHA, 22 <sup>nd</sup> Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	160	152	402		25.00	IS 3025 /16:1984 R : 2006, Gravimetric
17	Total Suspended Solids, mg/l, Max	28	28	24		10.00	IS 3025 /17:1984, R :1996, Gravimetric
18	Zinc (as Zn), mg/l, Max	<0.01	<0.01	<0.01		0.01	IS 3025 /49 : 1994, R : 2009, AAS-Flame

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**TEST REPORT**

03/19 Test Report No. 2237	Job No. 094318021	Year	FY2018-19
Type of Sample:	Drinking Water	Quarter Ending	Mar-19
Customer	CCL	Date of Receipt:	16-01-2019
Mode of Receipt of Sample:	Jointly picked up sample by laboratory at quarterly interval	Date of Analysis:	16.01.19-20.02.19
Testing Protocol:	IS:10500 Drinking Water Standards		
Remarks & Observation:	Samples received in 2 ltr plastic Jerri cane, Colour as observed is transparent		

**TEST RESULT**

The sample has been tested with the following results:-

Area : North Karanpura

Project: Purnadih OCP

Stations:

1. Hand Pump, Tumang Village

Date of Sampling:

14-01-2019

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Standards	Standard / Test Method
		1	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22 <sup>nd</sup> Edition, Carmine
2	Cadmium (as Cd), mg/l, Max	<0.0005			0.0005	0.003	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
3	Calcium (as Ca), mg/l, Max	48			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	34			2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03			0.03	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.42			0.02	1.0	APHA, 22 <sup>nd</sup> Edition, SPADNS
7	Free Residual Chlorine, mg/l, Min	<0.02			0.02	0.2	APHA, 22 <sup>nd</sup> Edition, DPD
8	Iron (as Fe), mg/l, Max	<0.06			0.06	0.3	IS 3025 /53 : 2003, R : 2009, AAS-Flame
9	Lead (as Pb), mg/l, Max	<0.005			0.005	0.01	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
10	Manganese (as Mn), mg/l, Max	0.05			0.02	0.1	IS-3025/59:2006,AAS-Flame
11	Nickel (as Ni), mg/l, Max	<0.01			0.01	0.02	IS-3025/54:2003, AAS-Flame
12	Nitrate (as NO <sub>3</sub> ), mg/l, Max	2.08			0.5	45	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
13	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
14	pH value	7.14			0.2	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
15	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, Max	<0.001			0.001	0.001	APHA, 22 <sup>nd</sup> Edition, 4-Amino Antipyrine
16	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
17	Sulphate (as SO <sub>4</sub> ) mg/l, Max	88			2.00	200	APHA, 22 <sup>nd</sup> Edition, Turbidity
18	Total Alkalinity (CaCO <sub>3</sub> ), mg/l, Max	128			4.00	200	IS-3025/23:1986, Titration
19	Total Arsenic (as As), mg/l, Max	<0.002			0.002	0.01	IS 3025/ 37:1988 R : 2003, AAS-VGA
20	Total Chromium (as Cr), mg/l, Max	<0.04			0.04	0.05	IS-3025/52:2003, AAS-Flame
21	Total Dissolved Solids, mg/l, Max	330			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (CaCO <sub>3</sub> ), mg/l, Max	208			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	1			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	<0.01			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

Note: 1) This Report refers to the values obtained at the time of testing and results related to the items tested  
 2) This Report cannot be reproduced in part or full without written permission of the management.  
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