



**ENVIRONMENTAL CLEARANCE  
(J-11015/610/2007- IA.II(M) )**

**APRIL'14 to SEPTEMBER'14**

**ASHOK PROJECT**



(ISO 9001 & ISO 14001-certified)

**(PIPARWAR AREA)**

**CENTRAL COALFIELDS LIMITED**

**Status of compliance of the terms and conditions given in the Environmental clearance letter No. J-1105/610/2007- IA. II (M) dt. 17.04.2008 issued by MOEF , Govt. of India, New Delhi for expansion of production capacity of Ashok OCP from 6.5 MTPA to 10 MTPA.**

Period – April' 14 to September' 14

**A. SPECIFIC CONDITIONS**

<b>Sl. No.</b>	<b>Condition</b>	<b>Status of compliance</b>
(i)	No mining operations shall be undertaken 112.08 ha of forestland within the ML which falls in the safety zone. Of the balance 242.02 ha of forestland, no mining operations shall be undertaken in the 75.11 ha of the forestland until clearance has been obtained under the provisions of FC Act, 1980	No mining operations are undertaken in 112.08 ha of forest land within the ML which falls in the safety zone. 166.91 ha of forest land released vide letter no. 8-178/97-FC, dt 9/11/99. No mining operations are undertaken in 75.11 ha of balance forest land.
(ii)	Mining shall be carried out as per statuette from the streams / nallahs flowing within the lease and the along the diverted nallah along the lease boundary.	Mining is being done as per Statute & Project Report prepared by CMPDI. At the starting period quarry was 1.72 km away from the bank of Damodar river Gradually quarry is moving away from Damodar river in North west direction Now it is 6.3 km away from the bank of Damodar.
(iii)	Topsoil should be stacked properly with proper slope at earmarked site(s) and should not be kept active and shall be used for reclamation and development of green belt	Total top soil excavated 8.4 lakh cum since start of mine, out of this 8.4 lakhs cum has been used in reclamation and development of green belt.
(iv)	OB should be stacked at earmarked one external OB dumpsite within ML area and shall be a maximum height of 60m only and consist of three benches of 20m each. The ultimate slope of the dump shall not exceed 28*. Monitoring and management of reclaimed dumpsite should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional office located at Bhubaneshwar on yearly basis.	There is no external dump. OB is back filled in the de-coaled area. Reclaimed ground level is not above the pre mining ground level. Total number of OB Dumps in de-coaled area: 3 Three nos with Maximum height of 60 M each consisting of three benches of 20 M height Ultimate slope of the dump in the de coaled area is 26 to 28 degree. Afforestation is undertaken on stable reclaimed area. Monitoring and management of reclaimed dump site is under taken by State Forest department until the vegetation become self- sustaining. Plantation has been done on an area of 197.29 Ha. Afforestation done : 5.08 lakhs saplings.

Sl. No.	Condition	Status of compliance
(v)	Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected should be utilized for watering the mine area, roads, green belt development, etc. The drains should be regularly desilted and maintained properly. Garland drains (size, gradient and length) and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also be provided adequate retention period to allow proper settling of silt material.	Catch drains of 800 m of adequate size (2 mtr avg width) have been made and kept maintained. Sumps are created to take care of entire catchments area. The mine water is used for the spraying on road for dust suppression. The sump capacity is 5.67 Lakh cub. Meter. Adequate time is given for settlement of silt. Every year sump is being shifted as quarry progresses; therefore no cleaning of silt is required. For the year 2014-15, Sump capacity is of 12.39 crore Gallon.
(vi)	Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data.	Retaining wall of dimension 45m (L) X 1m (Ht) X 0.5m (W) has already been constructed. 45 mt. wide check dam has also been constructed.
(vii)	Mineral transportation from mine to CHP from CHP to railway siding by road. The road shall be metal topped. Green belt shall be developed on both sides of the roads. Loading at Railway siding shall be by high capacity Silo Loading System.	Coal is transported directly from mine to railway siding on black topped / PCC road of which 3.5 K.M has been made PCC and work in progress for remaining 4.2 K.M. Green belt has been developed on both sides all along the transportation road. The construction of high capacity Silo Loading System is in the process of estimation & tendering
(viii)	Conveyor system for mineral transportation shall be closed with high efficiency water sprinkling system provided to check fugitive emissions at the transfer points, haulage roads etc. Dry fogging shall be provided for crushing / loading operations for dust control at the CHP with Rapid Loading System.	There is no Conveyor system for coal transportation. The provisions such as dry fogging, effective dust suppression at transfer points shall be incorporated in the proposed CHP. Part (I) of the Tender has been opened.
(ix)	Drills should be wet operated only.	All the drills have been provided with wet drilling arrangement.
(x)	Controlled blasting should be practiced with use of delay detonators. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders should be implemented.	Controlled blasting techniques is being practiced. Blasting is undertaken under supervision of Blasting Officer. Proper blast design is prepared to control ground vibration and to arrest fly rocks and boulders. Blasting is done with the use of shock tubes. Maximum charge per delay 80 KG is used to reduce ground vibration and noise pollution.

Sl. No.	Condition	Status of compliance																		
(xi)	The total area that shall be brought under afforestation at the time of mine closure shall not be less than 918.076 ha which includes reclaimed external OB dump and backfilled area (516.63 ha), along ML boundary, safety zone (5.043 ha) and undisturbed area, along roads and infrastructure, green belt (401.44 ha) and in township outside the lease by planting native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha.	The density of plantations undertaken is 2500 plants per ha. So far 193.29 ha of area has already been planted with 4.98 lakh plants. Plantations as stipulated will be undertaken time to time.  Road side plantation - 10 KM. Species of plants are- Sisam, Gamhar, Bakain, Mahua, Karange, Sal, Kathal, Mango etc.																		
(xii)	A Progressive Mine Closure Plan shall be implemented by reclamation of quarry area of 516.63 ha which shall be backfilled and afforested by planting native plant species in consultation with the local DFO / Agriculture Department. The density of the trees should be around 2500 plants per ha. The balance 50 ha of decolaed area /void is being converted into a water reservoir which shall be gently sloped. The upper benches of the reservoir shall be terraced and stabilised with plantation.	A mine closure plan of Ashok OCP has been made and approved by CCL Board in its 385 <sup>th</sup> meeting on 24.02.2012.  About 197.29 Ha of mined out area has been reclaimed till Sept 2014. The density of plantation is 2500 plants per Ha and is done by State Forest Deptt, Jharkhand.  The final mine closure plan shall be prepared about five years before actual closure of mine.																		
(xiii)	Prior approval of the CGWB/CGWA shall be obtained in cases of use of groundwater for mining operations.	Agreed.																		
(xiv)	Regular monitoring of groundwater level and quality should be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity should be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality in May. Data thus collected should be submitted to the Ministry of Environment & Forests and to the Central Pollution Control Board quarterly within one month of monitoring.	Regular monitoring of groundwater level is being done manually. Procurement of Peizometer is under process It is being monitored by CMPDIL. Details of Well: <table border="1" data-bbox="846 1444 1427 1661"> <thead> <tr> <th>Village</th> <th>No.</th> <th>Depth</th> </tr> </thead> <tbody> <tr> <td>Kalyanpur</td> <td>04</td> <td>30ft</td> </tr> <tr> <td>Bijain</td> <td>05</td> <td>40 ft</td> </tr> <tr> <td>Benti</td> <td>01</td> <td>40 ft</td> </tr> <tr> <td>Barwatola</td> <td>01</td> <td>40 ft</td> </tr> <tr> <td>Henzda</td> <td>01</td> <td>40 ft</td> </tr> </tbody> </table>	Village	No.	Depth	Kalyanpur	04	30ft	Bijain	05	40 ft	Benti	01	40 ft	Barwatola	01	40 ft	Henzda	01	40 ft
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<b>Sl. No.</b>	<b>Condition</b>	<b>Status of compliance</b>
(xv)	The project authorities should meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.	5 nos. of boreholes with 10 HP capacity submersible pumps have been provided to Berwatola and Jaratongdi, Benti, Bijan, Henjda villages. About 6 nos. of wells old & 7 Nos. well new have been dug, while 16 nos. of hand pumps are maintained for supplementing water needs of the surrounding villagers. Ground water recharging is also done in lagoons at three different places at village Benti which is close to mine.
(xvi )	Sewage treatment plant of adequate capacity shall be installed in the colony. ETP should also be provided for workshop and CHP wastewater. Treated wastewater meeting prescribed norms only shall be permitted to be discharged in to the natural water courses.	At colony sewage treatment is done by Septic tank and soak pit method. ETP has been functioning at the work shop and treated water is re-circulated for washing & other purposes.
(xvi i)	Besides carrying out regular periodic health check up of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check up for occupational diseases and hearing impairment, if any, through an agency such as NIOH, Ahmedabad within a period of one year and the results reported to this Ministry and to DGMS.	Periodical medical examination system with occupational health check facilities Initial Medical Examination for occupational diseases is done at the time of new recruitment and periodical medical examination of 1/5 total man power is done every year. During the period April' 14 to Oct' 14 - PME was done for 95 employees & IME was done for 123 workers.
(xvi i)	A detailed R&R Plan including for all PAFs including tribals to be displaced from the project area shall be prepared and implemented in a stipulated time –frame. The compensation shall be not less than that specified in the National R&R Policy. A detailed Socio-economic survey shall be carried out and based on the same and effective R&R package shall be given to ensure restoration of income of project affected persons (PAP). Provision shall also be made in the R&R Plan to take care of the land less labourers and the tribals.	It is done as per the approved R&R policy of CIL. PAPs are provided direct / alternative employment in addition to the compensation for land, trees, hutments, cattle sheds, well and also water, Electricity, School, Road etc. They are also being engaged in different contractual works in coal production and overburden removal.

<b>Sl. No.</b>	<b>Condition</b>	<b>Status of compliance</b>
(xix)	For monitoring land use pattern and for post mining land use, a time series of landuse maps, based on satellite imagery (on a scale of 1: 5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MOEF and its Regional office at Bhubaneshwar.	CMPDI has been entrusted with job of monitoring the land use by Remote Sensing. (i) The total vegetation cover in lease hold area of Ashok OCP has increased from 2.37 KM square (During 2002) to 3.0637 KM square due to massive plantation undertaken by CCL on the back filled area. (ii) Area of waste land has been reduced from 1.21 Km square (Yr. 2002) to 0.36 KM square (Yr. 2006) in lease hold area
(xx)	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	It will be implemented during the last 5 years of the project period.

Sl. No.	A. General Condition	Status of compliance
i	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment and Forests.	There is no change in mining technology
ii	No change in the calendar plan including excavation, quantum of mineral coal and waste should be made.	Production of coal and OB is as per calendar plan
iii	Four ambient air quality monitoring stations should be established in the core zone as well as in the buffer zone for SPM, RSPM, SO <sub>2</sub> and NO <sub>x</sub> monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board.	Air quality monitoring station has been established at Tola across Benti Nallah, Benti village for monitoring SPM, RPM, SO <sub>2</sub> , NO <sub>x</sub> .  The results of monitoring report are enclosed as Annexure I.
Iv	Data on ambient air quality (SPM, RSPM, SO <sub>2</sub> and NO <sub>x</sub> ) should be regularly submitted to the Ministry including its Regional Office at Bhubaneshwar and to the State Pollution Control Board and the Central Pollution Control Board once in six months.	Environment Quality data is regularly submitted to MoEF, Regional Office and SPCB. A copy of same is enclosed as Annexure I.
v	Fugitive dust emissions from all the sources should be controlled regularly monitored and data recorded properly. Water spraying arrangement on haul roads, wagon loading, dump trucks (loading and unloading) points should be provided and properly maintained.	Fugitive dust emissions are controlled and systems monitored. Water sprinkling along haul roads is ensured with following equipments. 1. Mobile sprinklers total -12 a) 28KL cap.       - 04 b) 12KLcap       - 02 c)10KLcap       - 06  2. Static sprinklers points :               116 Near workshop ;                               05 Behind Basant Vihar Colony :               30 Along loading platform of siding :       36 From damodar bridge to CGM office :     45 Further for 59 no. of new static sprinklers a proposal has been submitted to CCL Hq.
vi	Adequate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc should be provided with ear plugs/muffs.	Adequate measures have been taken. Noise levels are regularly monitored by CMPDIL and kept below 85 dBA. Ear plugs / muffs are provided to mine workers for regular use  The results of noise monitoring report are enclosed as Annexure II.

Sl. No.	A. General Condition	Status of compliance
vii	Industrial wastewater (workshop and wastewater from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31 <sup>st</sup> December 1993 or as amended from time to time before discharge. Oil and grease trap should be installed before discharge of workshop effluents.	ETP / Oil & Grease traps are in operation. 100% water is re-cycled. The results of water quality monitoring report done by CMPDIL are enclosed as Annexure III. The result of water quality monitoring report.
viii	Vehicular emissions should be kept under control and regularly monitored. Vehicles used for transporting the mineral should be covered with tarpaulins and optimally loaded.	Optimum loading in transporting vehicles is being ensured. To monitor Vehicular emission, exhaust air analysis is being done. Covering with tarpaulins in truck for outside vehicles is being done.
ix	Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board.	Pollution monitoring and analysis is being carried out by CMPDIL, Ranchi.
x	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance programme of the workers should be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed.	Persons working in dusty area have been provided with dust mask.  Initial and periodic medical examination of employees is carried out on regular basis every year.  PME was done for 95 employees & IME was done for 123 workers.
xi	A separate environmental management cell with suitable qualified personnel should be set up under the control of a Senior Executive, who will report directly to the Head of the company.	Sri Sanjay Kumar, has been appointed exclusively to work as Area Environmental Officer of Piparwar Area and Sri R.N Prasad Engineer civil has been appointed exclusively to work as Environmental Officer of the project. They have been employed on full time basis & have not been given any additional duties.
xii	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year-wise expenditure should be reported to this Ministry and its Regional Office at Bhubaneshwar.	Funds earmarked for environmental works are used for this purpose only.



Sl. No.	A. General Condition	Status of compliance
xiii	A copy of the environmental clearance letter shall be marked to concerned Panchayat/ local NGO, if any, from whom any suggestion / representation has been received while processing the proposal.	Complied.
xiv	State Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industry Centre and Collector's Office / Tehsildar's Office for 30 days.	Copy of environmental clearance has been submitted at JSPCB Ranchi.
xv	The Project authorities should advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution control Board and may also be seen at the website of the Ministry of Environment & Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> .	The advertisement about the environment clearance had been published in news papers Hindustan', Prabhat Khabar, Dainik Jagran & Ranchi Express in Hindi.

(PROJECT OFFICER )  
ASHOK OC PROJECT

## **ASHOK OCP, PIPARWAR AREA, CCL**

### DETAILS OF YEARWISE PLANTATION

Sl. No.	Year	Ashok OCP	
		Area (Ha.)	No. of plants
1	1998-99	91.67	234175
2	2000-2001	8.5	21250
3	2002-2003	10	25000
4	2003-2004	11.64	28850
5	2004-2005	18.02	55000
6	2005-2006	8.02	20000
7	2007-2008	8.94	22725
8	2008-2009	5	12500
9	2011-2012	19	47500
10	2012-2013	7.5	18755
11	2013-2014	5	12500
	2014-2015	4	10000
	<b>Total</b>	<b>197.29</b>	<b>508255</b>

# ASHOK OC PROJECT, PIPARWAR AREA, CCL.



**AREA STATISTICS (TOTAL AREA 5.42 Sq. Km.)**

LEVEL I	CLASS		COLOUR	AREA	
	LEVEL II	LEVEL III		(KM <sup>2</sup> )	(%)
VEGETATION COVER	FOREST	TENNE FOREST		0	0.00
		DEHN FOREST		0.63	11.62
	NON FOREST	SCRUBS		0.54	9.96
		SOCIAL FORESTRY		0.32	5.90
		PLANTATION		1	18.45
		BACK FILLED AREA		0.01	0.18
AGRICULTURAL LAND	CROPP		0.78	14.39	
	FALLOW		0.15	2.77	
WASTE LAND	WEST UP LAND	WASTE UP LAND WITHOUT SCRUBS		0	0.00
		SAND BODY		0.73	13.47
	MINING AREA	QUARRY	COAL QUARRY		0.4
ADVANCE QUARRY				0.15	2.77
OVER BURDEN		COAL DUMP		0.1	1.85
		BACK FILLED AREA		0.49	9.04
		OS		0.04	0.74
SETTLEMENT	RURAL SETTLEMENT	VILLAGE		0	0.00
	INDUSTRIAL SETTLEMENT	WASHERY		0.02	0.38
	WORKSHOPS		0.04	0.74	
WATER BODY	RIVER / NALA / POND		0.04	0.74	
			0.04	0.74	
<b>Total Leasehold Area</b>				5.42	100.00
<b>INDEX</b>					
Road					
Lease Hold Area					
Customer: <b>CENTRAL COALFIELDS LIMITED, RANCHI, JHARKHAND</b>					
JOB TITLE: Land Reclamation/Monitoring of OC Projects				Job No. 8014/2007	
Subject: Landfill Cover/Top of Ashok OCP based on ICD 2-C Groundwater data of December 01/16		Authority:	Name:	Designation:	Signature/Date:
 <b>cmpdi</b> A Public Sector Company		Prepared:	K.K. Chakraverty	C.M.	
		Approved:	N.P. Singh	G.M.	
SCALE: 0 0.25 0.5 1 Km.		Sheet		Date: 16/11/2016	
Dra. No. HSE/EL/4/11/16/1		Page No.			



**Dust Supression of Loaded Tippers by Static Sprinkler at Filter plant Ashok Project.**



**Dust supression by Water Sprinkler at Coal Transporation Road near Basant Vihar Colony Ashok Project.**



**Reclamation and Afforestation for Ashok Project.**



ASHOK OC PROJECT, PIPARWAR AREA, CCL.

## TEST REPORT

<b>Lab No. T-2187</b>	<b>Job No. 094314026</b>	<b>Year</b>	<b>2014-15</b>
Type of Sample:	Ambient Air	Quarter Ending	June '14
Customer / W. O. no. & Date:	CCL/DGM-HOD (E&F)/2014/ Dt. 29/04/14	Date of Receipt of Sample:	02.05.14
Mode of Receipt of Sample:	Jointly sampling with customer	Date of Analysis:	02.05.14-12.05.14
Sampling Protocol:	IS 5182 (part 14): 2000 ,R -2010, Methods for Measurement of Air Pollution	Date of Reporting:	12.05.14
Testing Protocol:	Gazette Notification no. G.S.R 742(E) dt.25 <sup>th</sup> Sept. '2000		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

### TEST RESULT

The sample has been tested with the following results:-

**Area :** **Piparwar** **Project:** **Ashoka OCP**

**Stations:** 1. Benti Village **Date of Sampling:** 24-25/04/2014

2. Tola Across Bentalala

3.

4.

24-25/04/2014

S.No	Test Parameters	Units	Test Method	TEST RESULT			
				1	2	3	4
Stations:				1	2	3	4
1	Total Particulate Matter (PM <sub>10</sub> + >PM <sub>10</sub> )	µg/m <sup>3</sup>	Lab.SOP 4 based on – IS: 5182/23, 2006	296	219		
2	Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	IS: 5182/23 2006	197	127		
3	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS: 5182 /02 2001 R-2006	<25	<25		
4	Nitrogen Oxides (as NO <sub>x</sub> )	µg/m <sup>3</sup>	IS: 5182 /02 1975 R-1998	19	19		

**Note:** Gazette Notification no. G.S.R 742(E) dt.25<sup>th</sup> Sept. '2000 is enclosed along for reference

**Analysed By**

**Checked By**

**G.M (Chemist)**  
**Env. Lab, CMPDI(HQ)**  
**(Authorized Signatory)**

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Note: 1) This Report refers to the values obtained at the time of testing and results related to the items tested  
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3) Liability for return of samples ceases as samples cannot be retained for retests.

## TEST REPORT

<b>Lab No. T-2187</b>	<b>Job No. 094314026</b>	<b>Year</b>	<b>2014-15</b>
Type of Sample:	Noise	Quarter Ending	June '14
Customer / W. O. no. & Date:	CCL/DGM-HOD (E&F)/2014/ Dt. 29/04/14	Date of Receipt of Sample:	02.05.14
Mode of Receipt of Sample:	Jointly sampling with customer	Date of Analysis:	-
Testing Protocol:	Gazette Notification no. G.S.R 742(E) dt.25 <sup>th</sup> Sept. '2000	Date of Reporting:	-
Remarks:			

### TEST RESULT

The sample has been tested with the following results:-

**Area :** **Piparwar** **Project:** **Ashoka OCP**

**Stations:**

1. Benti Village
2. Tola Across Bentinaala
- 3.
- 4.

Station Name	Date of Sampling	Noise Level
Benti Village	24/04/2014	47.7
Tola Across Bentinaala	24/04/2014	48.3

*Permissible Limit of Noise Level vide Gazette Notification G.S.R. 742(E) Dt. 25th Sep '2K*

	6.00 AM to 10.00 PM	10.00 PM to 6.00 AM
Noise Level	Leq 75 dB(A)	Leq 70 dB(A)

**Checked By**

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**G.M (Chemist)  
Env. Lab, CMPDI(HQ)  
(Authorized Signatory)**

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CENTRAL MINE PLANNING AND DESIGN INSTITUTE LTD.

**TEST REPORT**

<b>Lab No. T-2187</b>	<b>Job No. 094314026</b>	<b>Year</b>	<b>2014-15</b>
Type of Sample:	<b>Effluent Water</b>	Quarter Ending	<b>June '14</b>
Customer / W. O. no. & Date:	CCL/DGM-HOD(E&F)/2014/ Dt. 29/04/14	Date of Receipt of Sample:	02.05.14
Mode of Receipt of Sample:	Picked up sample by laboratory	Date of Analysis:	02.05.14-14.05.14
Testing Protocol:	<b>MOEF -SCH-VI STANDARDS, Class 'a'</b>	Date of Reporting:	14.05.14
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 :** Piparwar

**Project:**

**Ashoka OCP**

**Stations:**

1. Lagoon discharge
- 2.
- 3.

**Date of Sampling:**  
29/04/2014

Sl.No.	Parameter	Sampling Stations			Detection Limit	MOEF -SCH-VI STANDARDS Class 'A'	BIS Standard & Method
		1	2	3			
1	Ammonical Nitrogen, mg/l, Max	0.16			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	<0.001			0.001	2.0	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
5	COD, mg/l, Max	52			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	0.36			0.30	5.0	APHA, 22 <sup>nd</sup> Edition Molybdovanadate
8	Fluoride (as F) mg/l, Max	0.74			0.02	2.0	APHA, 22 <sup>nd</sup> Edition, SPADNS
9	Free Ammonia, mg/l, Max	<0.01			0.01	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	<0.02			0.02	2.0	IS-3025/59:2006, AAS-Flame
14	Nickel (as Ni), mg/l, Max	<0.10			0.10	3.0	IS-3025/54:2003, AAS-Flame
15	Nitrate Nitrogen, mg/l, Max	1.6			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	8.04			2.5	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	<0.002			0.002	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)	31.9			Shall not exceed 5 <sup>th</sup> C above the receiving temp.		IS-3025/09:1984, Thermometric
22	Total Chromium (as Cr), mg/l, Max	<0.06			0.06	2.0	IS-3025/52:2003, AAS-Flame
23	Total Kjeldahl Nitrogen, mg/l, Max	1.30			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	46			10.00	100.0	IS 3025/17:1984, R :1996, Gravimetric
26	Zinc (as Zn), mg/l, Max	<0.01			0.01	5.0	IS 3025 /49 : 1994, R : 2009, AAS-Flame

**Analysed By**

**Checked By**

**G.M (Chemist)  
Env. Lab, CMPDI(HQ)  
(Authorized Signatory)**

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## TEST REPORT

Lab No. T-2187	Job No. 094314026	Year	2014-15
Type of Sample:	Surface Water	Quarter Ending	June '14
Customer / W. O. no. & Date:	CCL/DGM-HOD(E&F)/2014/ Dt. 29/04/14	Date of Receipt of Sample:	02.05.14
Mode of Receipt of Sample:	Picked up sample by laboratory	Date of Analysis:	02.05.14-14.05.14
Testing Protocol:	-	Date of Reporting:	14.05.14
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 :** Piparwar **Project:** Ashoka OCP

**Stations:** 1. Benti nala near Quarry **Date of Sampling:** 29/04/2014  
 2.  
 3.

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	IS 3025/37:1988 R : 2003, AAS-VGA
2	BOD (3 days 27°C), mg/l, Max	2.80				2.00	IS 3025/44: 1993, R : 2003 3 day incubation at 27°C
3	Cadmium(as Cd), mg/l, Max	<0.001				0.001	APHA, 22 <sup>nd</sup> Edition AAS-GTA
4	Chlorides (as Cl), mg/l, Max	88				2.00	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03				0.03	IS 3025 /42 : 1992 R : 2009, AAS-Flame
6	Disolved Oxygen, min.	4.80				0.10	IS 3025/38:1989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	0.68				0.02	APHA, 22 <sup>nd</sup> Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01				0.01	APHA, 22 <sup>nd</sup> Edition, 1,5 - Diphenylcarbohydrazide
9	Iron (as Fe), mg/l, Max	<0.06				0.06	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
10	Lead (as Pb), mg/l, Max	<0.005				0.005	APHA, 22 <sup>nd</sup> Edition AAS-GTA
11	Nitrate (as NO <sub>3</sub> ), mg/l, Max	6.20				0.50	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
12	pH value	8.15				2.5	IS-3025/11:1983, R-1996, Electrometric
13	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, Max	<0.002				0.002	APHA, 22 <sup>nd</sup> Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002				0.002	APHA, 22 <sup>nd</sup> Edition AAS-GTA
15	Sulphate (as SO <sub>4</sub> ) mg/l, Max	38				2.00	APHA, 22 <sup>nd</sup> Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	764				25.00	IS 3025 /16:1984 R : 2006, Gravimetric
17	Total Suspended Solids, mg/l, Max	64				10.00	IS 3025 /17:1984, R :1996, Gravimetric
18	Zinc (as Zn), mg/l, Max	<0.01				0.01	IS 3025 /49 : 1994, R : 2009, AAS-Flame

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## TEST REPORT

<b>Lab No. T-2187</b>	<b>Job No. 094314026</b>	<b>Year</b>	<b>2014-15</b>
Type of Sample:	<b>Drinking Water</b>	Quarter Ending	June '14
Customer / W. O. no. & Date:	CCL/DGM-HOD (E&F)/2014/ Dt. 29/04/14	Date of Receipt of Sample:	02.05.14
Mode of Receipt of Sample:	Picked up sample by laboratory	Date of Analysis:	02.05.14-14.05.14
Testing Protocol:	<b>IS:10500 Drinking Water Standards</b>	Date of Reporting:	14.05.14
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 :** Piparwar **Project:** Ashoka OCP

**Stations:** **Date of Sampling:** 29/04/2014

1. Well Water / Ground Water in the Mine Premises
- 2.
- 3.

Sl.No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water 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	<0.001			0.001	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	28			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	0.52			0.02	1.0	APHA, 22 <sup>nd</sup> Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.12			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	Nitrate (as NO <sub>3</sub> ), mg/l, Max	4.87			0.5	45	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
12	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	8.10			2.5	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
14	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 Autipyrine
15	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
16	Sulphate (as SO <sub>4</sub> ) mg/l, Max	28			2.00	200	APHA, 22 <sup>nd</sup> Edition. Turbidity
17	Total Alkalinity (c <sub>a</sub> co <sub>3</sub> ), mg/l, Max	172			4.00	200	IS-3025/23:1986, Titration
18	Total Arsenic (as As), mg/l, Max	<0.002			0.002	0.01	IS 3025/ 37:1988 R : 2003, AAS-VGA
19	Total Chromium (as Cr), mg/l, Max	<0.01			0.01	-	IS-3025/52:2003, AAS-Flame
20	Total Dissolved Solids, mg/l, Max	418			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
21	Total Hardness (c <sub>a</sub> co <sub>3</sub> ), mg/l, Max	212			4.00	200	IS-3025/21:1983, R-2002, EDTA
22	Turbidity, NTU, Max	3			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
23	Zinc (as Zn), mg/l, Max	<0.01			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

**Analysed By**

**Checked By**

**G.M (Chemist)  
Env. Lab, CMPDI(HQ)  
(Authorized Signatory)**

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**TEST REPORT**

<b>Lab No. T-2187</b>	<b>Job No. 094314026</b>	<b>Year</b>	<b>2014-15</b>
Type of Sample:	Ambient Air	Quarter Ending	Sept '14
Customer / W. O. no. & Date:	CCL/DGM-HOD (E&F)/2014/ Dt. 29/04/14	Date of Receipt of Sample:	31.07.14
Mode of Receipt of Sample:	Jointly sampling with customer	Date of Analysis:	31.07.14-08.08.14
Sampling Protocol:	IS 5182 (part 14): 2000 ,R -2010, Methods for Measurement of Air Pollution	Date of Reporting:	08.08.14
Testing Protocol:	Gazette Notification no. G.S.R 742(E) dt.25 <sup>th</sup> Sept. '2000		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

**TEST RESULT**

The sample has been tested with the following results:-

**Area :** Piparwar **Project:** Ashoka OCP

**Stations:**

1. Benti Village
2. Tola Across Bentalala
- 3.
- 4.

**Date of Sampling:**  
24-25/07/2014  
24-25/07/2014

S.No	Test Parameters	Units	Test Method	TEST RESULT			
				1	2	3	4
Stations:							
1	Total Particulate Matter (PM <sub>10</sub> +>PM <sub>10</sub> )	µg/m <sup>3</sup>	Lab.SOP 4 based on – IS: 5182/23, 2006	150	178		
2	Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	IS: 5182/23 2006	78	78		
3	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS: 5182 /02 2001 R-2006	<25	<25		
4	Nitrogen Oxides (as NO <sub>x</sub> )	µg/m <sup>3</sup>	IS: 5182 /02 1975 R-1998	22	21		

**Note:** Gazette Notification no. G.S.R 742(E) dt.25<sup>th</sup> Sept. '2000 is enclosed along for reference

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## TEST REPORT

<b>Lab No. T-2187</b>	<b>Job No. 094314026</b>	<b>Year</b>	<b>2014-15</b>
Type of Sample:	Noise	Quarter Ending	Sept '14
Customer / W. O. no. & Date:	CCL/DGM-HOD (E&F)/2014/ Dt. 29/04/14	Date of Receipt of Sample:	31.07.14
Mode of Receipt of Sample:	Jointly sampling with customer	Date of Analysis:	-
Testing Protocol:	Gazette Notification no. G.S.R 742(E) dt.25 <sup>th</sup> Sept. '2000	Date of Reporting:	-
Remarks:			

### TEST RESULT

The sample has been tested with the following results:-

**Area :** **Piparwar** **Project:** **Ashoka OCP**

**Stations:**

1. Benti Village
2. Tola Across Bentina
- 3.
- 4.

Station Name	Date of Sampling	Noise Level
Benti Village	24/07/2014	48.3
Tola Across Bentina	24/07/2014	49.5

*Permissible Limit of Noise Level vide Gazette Notification G.S.R. 742(E) Dt. 25th Sep '2K*

	6.00 AM to 10.00 PM	10.00 PM to 6.00 AM
Noise Level	Leq 75 dB(A)	Leq 70 dB(A)

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**G.M (Chemist)**  
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## TEST REPORT

Lab No. T-2187	Job No. 094314026	Year	2014-15
Type of Sample:	Effluent Water	Quarter Ending	Sept '14
Customer / W. O. no. & Date:	CCL/DGM-HOD(E&F)/2014/ Dt. 29/04/14	Date of Receipt of Sample:	31.07.14
Mode of Receipt of Sample:	Picked up sample by laboratory	Date of Analysis:	31.07.14-14.08.14
Testing Protocol:	MOEF -SCH-VI STANDARDS, Class 'a'	Date of Reporting:	14.08.14
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:-

<b>Area :</b>	Piparwar	<b>Project:</b>	Ashoka OCP
<b>Stations:</b>	1. Lagoon discharge 2. 3.	<b>Date of Sampling:</b>	30/07/2014

Sl.No.	Parameter	Sampling Stations			Detection Limit	MOEF -SCH-VI STANDARDS Class 'A'	BIS Standard & Method
		1	2	3			
1	Ammonical Nitrogen, mg/l, Max	0.14			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	48			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	0.33			0.30	5.0	APHA, 22 <sup>nd</sup> Edition Molybdovanadate
8	Fluoride (as F) mg/l, Max	0.66			0.02	2.0	APHA, 22 <sup>nd</sup> Edition, SPADNS
9	Free Ammonia, mg/l, Max	<0.01			0.01	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	<0.02			0.02	2.0	IS-3025/59:2006, AAS-Flame
14	Nickel (as Ni), mg/l, Max	<0.10			0.10	3.0	IS-3025/54:2003, AAS-Flame
15	Nitrate Nitrogen, mg/l, Max	1.5			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	7.64			2.5	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	<0.002			0.002	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)	27.0			Shall not exceed 5° C above the receiving temp.		IS-3025/09:1984, Thermometric
22	Total Chromium (as Cr), mg/l, Max	<0.06			0.06	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	42			10.00	100.0	IS 3025/17:1984, R:1996, Gravimetric
26	Zinc (as Zn), mg/l, Max	<0.01			0.01	5.0	IS 3025 /49 : 1994, R : 2009, AAS-Flame

Analysed By

Checked By

**G.M (Chemist)  
Env. Lab, CMPDI(HQ)  
(Authorized Signatory)**

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## TEST REPORT

Lab No. T-2187	Job No. 094314026	Year	2014-15
Type of Sample:	Surface Water	Quarter Ending	Sept '14
Customer / W. O. no. & Date:	CCL/DGM-HOD(E&F)/2014/ Dt. 29/04/14	Date of Receipt of Sample:	31.07.14
Mode of Receipt of Sample:	Picked up sample by laboratory	Date of Analysis:	31.07.14-14.08.14
Testing Protocol:	-	Date of Reporting:	14.08.14
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 :** Piparwar **Project:** Ashoka OCP

**Stations:** 1. Benti nala near Quarry  
 2.  
 3.

**Date of Sampling:** 30/07/2014

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	IS 3025/37:1988 R : 2003, AAS-VGA
2	BOD (3 days 27°C), mg/l, Max	3.00				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	APHA, 22 <sup>nd</sup> Edition AAS-GTA
4	Chlorides (as Cl), mg/l, Max	66				2.00	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03				0.03	IS 3025 /42 : 1992 R : 2009, AAS-Flame
6	Disolved Oxygen, min.	4.70				0.10	IS 3025/38:1989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	0.70				0.02	APHA, 22 <sup>nd</sup> Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01				0.01	APHA, 22 <sup>nd</sup> Edition, 1,5 - Diphenylcarbohydrazide
9	Iron (as Fe), mg/l, Max	<0.06				0.06	IS 3025 /53 : 2003, R : 2009, AAS-Flame
10	Lead (as Pb), mg/l, Max	<0.005				0.005	APHA, 22 <sup>nd</sup> Edition AAS-GTA
11	Nitrate (as NO <sub>3</sub> ), mg/l, Max	5.31				0.50	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
12	pH value	7.68				2.5	IS-3025/11:1983, R-1996, Electrometric
13	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, Max	<0.002				0.002	APHA, 22 <sup>nd</sup> Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002				0.002	APHA, 22 <sup>nd</sup> Edition AAS-GTA
15	Sulphate (as SO <sub>4</sub> ) mg/l, Max	38				2.00	APHA, 22 <sup>nd</sup> Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	540				25.00	IS 3025 /16:1984 R : 2006, Gravimetric
17	Total Suspended Solids, mg/l, Max	54				10.00	IS 3025 /17:1984, R :1996, Gravimetric
18	Zinc (as Zn), mg/l, Max	<0.01				0.01	IS 3025 /49 : 1994, R : 2009, AAS-Flame

**Analysed By**

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## TEST REPORT

Lab No. T-2187	Job No. 094314026	Year	2014-15
Type of Sample:	Drinking Water	Quarter Ending	Sept '14
Customer / W. O. no. & Date:	CCL/DGM-HOD (E&F)/2014/ Dt. 29/04/14	Date of Receipt of Sample:	31.07.14
Mode of Receipt of Sample:	Picked up sample by laboratory	Date of Analysis:	31.07.14-14.08.14
Testing Protocol:	IS:10500 Drinking Water Standards	Date of Reporting:	14.08.14
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 :** Piparwar **Project:** Ashoka OCP

**Stations:** 1. Well Water / Ground Water in the Mine Premises **Date of Sampling:** 30/07/2014  
2.  
3.

Sl.No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water 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 ,Carminc
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	48.0			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	54			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	0.40			0.02	1.0	APHA, 22 <sup>nd</sup> Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.08			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	Nitrate (as NO <sub>3</sub> ), mg/l, Max	4.87			0.5	45	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
12	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	7.24			2.5	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
14	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, Max	<0.002			0.002	0.001	APHA, 22 <sup>nd</sup> Edition,4- Amino Autipyrine
15	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
16	Sulphate (as SO <sub>4</sub> ) mg/l, Max	18			2.00	200	APHA, 22 <sup>nd</sup> Edition. Turbidity
17	Total Alkalinity (c <sub>a</sub> CO <sub>3</sub> ), mg/l, Max	140			4.00	200	IS-3025/23:1986,Titration
18	Total Arsenic (as As), mg/l, Max	<0.002			0.002	0.01	IS 3025/ 37:1988 R : 2003, AAS-VGA
19	Total Chromium (as Cr), mg/l, Max	<0.06			0.06	0.05	IS-3025/52:2003, AAS-Flame
20	Total Dissolved Solids, mg/l, Max	444			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
21	Total Hardness (c <sub>a</sub> CO <sub>3</sub> ), mg/l, Max	196			4.00	200	IS-3025/21:1983, R-2002, EDTA
22	Turbidity, NTU, Max	3			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
23	Zinc (as Zn), mg/l, Max	<0.01			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

Analysed By

Checked By

**G.M (Chemist)**  
**Env. Lab, CMPDI(HQ)**  
**(Authorized Signatory)**

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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.  
3) Liability for return of samples ceases as samples cannot be retained for retests.