

**EXECUTIVE SUMMARY**  
**FOR**  
**PUBLIC HEARING**  
**OF**  
**INTEGRATED CEMENT PLANT (900 tpd)**  
**AND**  
**CAPTIVE POWER PLANT ( 10 MW)**  
**AT**  
**WAHIAJER, JAINTIA HILLS, MEGHALAYA**  
**OF**  
**JUD CEMENT (P). LTD.**  
**POLICE BAZAR, SHILLONG**

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## CONTENTS

<b>Sl. No.</b>	<b>Chapters</b>	<b>Page Nos.</b>
1.	Introduction	1
2.	Statutory Compliance	1
3.	Project Description	2
4.	Topography and Drainage	2
5.	Reason you selecting the proposed site	2-3
6.	Product and Capacity of production	3
7.	Process details	3-6
8.	Requirement of Raw materials	7
9.	Water Consumption	8
10.	Details of Manpower	8-9
11.	Cost of project	9
12.	Duration of material of construction	9
13.	Power	9
14.	Fuel	9
15.	Waste water	10
16.	Baseline data	10
17	Environmental Impact Assessment	11-14

### **Exhibits:**

1.	Line diagram of S.T.P	15
2.	Windrose diagram	16-17
3.	Location map	18

## **1. Introduction**

JUD Cements Private Limited (JCPL), Meghalaya, a part of U.D. Group proposes to set up an integrated 900 tpd Cement Manufacturing Unit along with 10 MW Captive Power Plant (CPP) near Wahiajer village, Jaintia hills district of Meghalaya.

Both the important input materials limestone and coal are found in the Jaintia hills district in abundance. Cement manufacturing units are power intensive and require power on continuous basis. Due to power deficit status, possibility of regular, uninterrupted power supply from Meghalaya State MeSEB is uncertain.

Further, to encourage industries for investment in the State, Meghalaya Govt. is supporting installation of Captive power Plant (CPP) for meeting own power requirement of production units.

JCPL also have arranged for power supply from Meghalaya State Electricity Board & have all ready received sanction of 132 KV supply at 8-10 MVA contract demand.

## **2. Statutory Compliance:**

The project is new and the company's management is very keen, as well committed for sustainable development & pollution control and committed to observe the compliance as per State Pollution control Board's & MoEF's guidelines

The project proponent had submitted an application for 900tpd cement plant in August 2006 to State Pollution Control Board, before the issuance of new notification dated 14.09.06. The State Pollution Control Board has accorded

the consent to establish vide their letter no. MPCB/TB-82-2006/2006-2007/12 dated 01.11.06.

The project proponent has started the construction work for 900 tpd Cement plant. As per the notification management has to take Environmental Clearance for the integrated project of Cement Plant and 10 MW CPP, from the State level Environmental Impact Assessment Authority for which Form-I & proposed TOR has to be submitted. M/s JCPL have engaged M/s Ecomen Laboratories (P) Ltd., Lucknow for preparation of the same. along with EIA/EMP report.

M/s Ecomen Laboratories (P) Ltd. have carried out necessary environmental studies & monitoring during January-April 2007 and also collected secondary data from various sources, which forms the basis of the present draft EIA/EMP report.

### **3. Project Descriptions**

The site is at a distance of 2 km from village Wahiajer, 4 km; from Lumshnong and 2.5 km of NH-44 connecting Shillong, state capital of Meghalaya and Silchar town of the state of Assam.

### **4. Topography & Drainage**

The topography in the area proposed for the plant site is slightly undulating, but largely an even piece of land, formed naturally at the foothills. A few watercourses developed along the undulating profile of the surface, have their flow towards southwest and join Lunar/Lyber river.

### **5. Reason for selecting the proposed Site**

The major criteria for locating the proposed cement plant at this site are as follows:

- The plant location is close to limestone deposit.

- The site is almost flat with slightly undulating portion.
- Perennial source of water exists in the vicinity of the proposed site.
- Power supply is available
- The site is in proximity to railhead, which will reduce transportation costs.
- The site is in proximity to an established township, which would offer reasonable amenities to the plant employees.
- The location will enable the management to deliver cement at the most economical rate, commensurate with the capital investment of the project.

## **6. Product & Capacity of Production**

Cement Plant : 900 tonnes of clinker per day.

Captive Power Plant : 10 MW Power to ensure continuous supply to cement plant

Lime stone mine : Supply of 0.6 million tonnes per annum limestone (4.76 ha. Lease area.)

## **7. Process Detail**

### **A) Cement Plant**

Basic ingredients used for manufacture of cement are limestone, coal, flyash, additives and gypsum.

The pre-blended limestone along with additives are ground in raw mill and stored in silo from where it is sent to pre-heater. After reaching the pre-calcination temperature, the raw meal is fed to kiln. The coal is ground in mills upto 16% on 90 micron size and fed to kiln through coal burner. Clinker thus formed is cooled by ambient air and the same acts as secondary

air for kiln. The cooled clinker is transported by means of bucket conveyor to clinker silo and in turn fed to cement mills.

Fly ash is transferred through sealed containers and pneumatically stored in storage hopper. Fly ash is dozed along with clinker to cement mills for producing cement.

The clinker is ground with gypsum and fly ash in the cement mills and is sent for packing in the automatic electronic and mechanical packers. The packed cement is dispatched to market by means of Rail & Road. The process flow diagram is shown in **Exhibit No 7.1**

## **B) Captive Power Plant**

1. The process consists of generating steam in the boiler and converting the same into mechanical energy by using turbine and finally converting the mechanical energy into electrical energy in alternator. Hence the CPP will consists of the following main units.

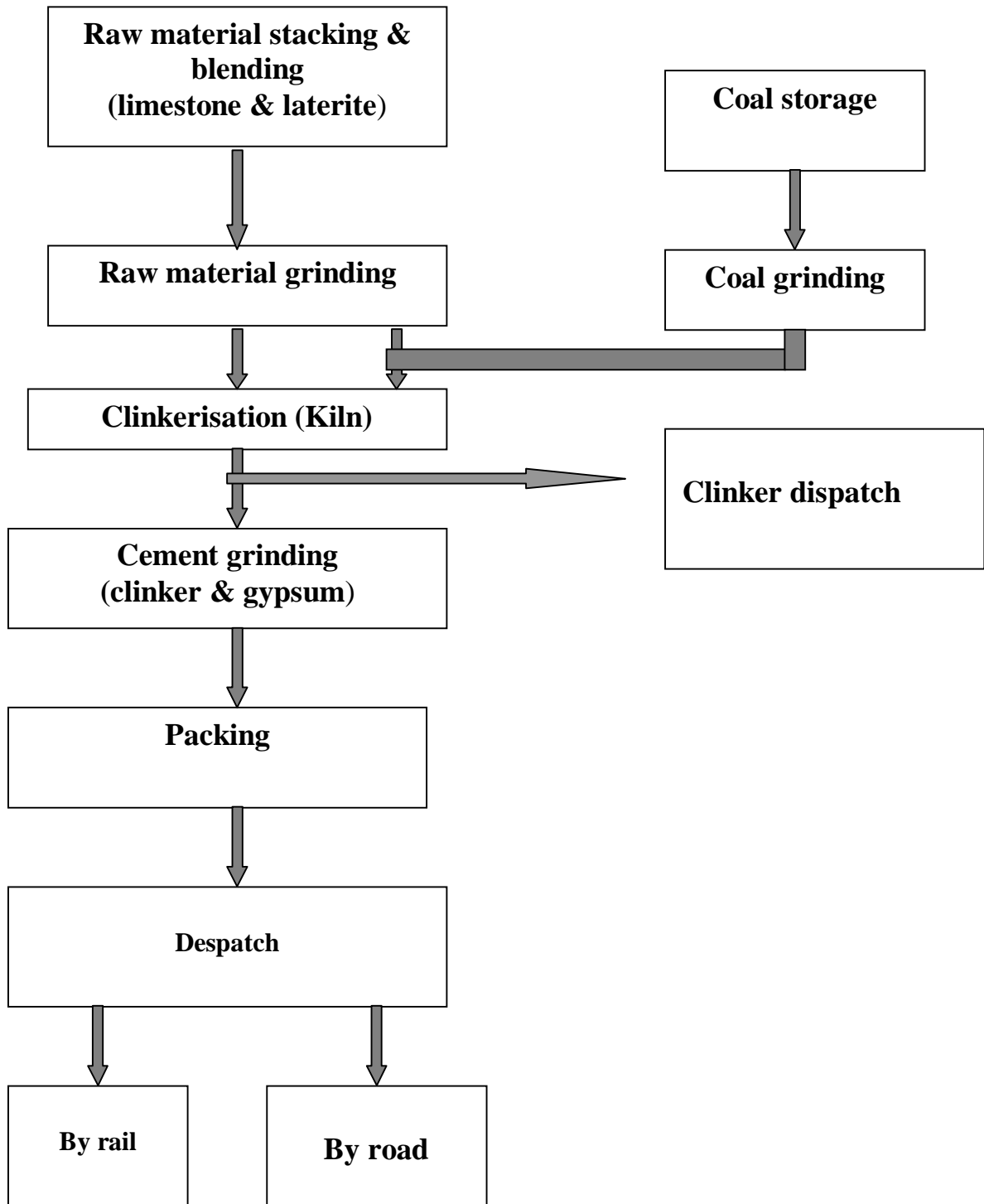
- i) One Atmospheric Fluidised Bed Combustion (AFBC) boiler suitable for 100% Meghalaya high sulphur coal.
- ii) One Steam Turbo-Generator with Air Cooled Condenser

The Heat Energy from the burning of Coal will be utilized in producing the required steam for running the steam turbo alternator rated for 10 MW

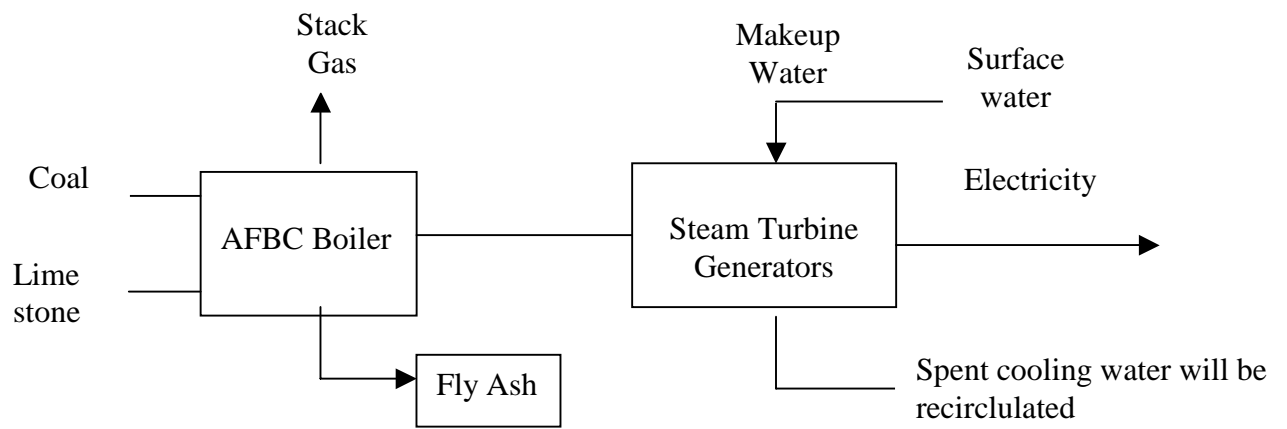
The process flow diagram is shown in **exhibit no.7.2.**

**Exhibit 7.1**

**Cement Manufacturing Process flow diagram**



Power Generation Flow Diagram



## 8. Requirement of Raw Material

### 8.1 For Cement plant

Sl. No.	Material	Source Category	Source locality	Distance from plant (Km.)	Remarks
1	Limestone	Captive mine	Limestone mine of 4.76 ha	1.5 Km. SE	The crusher to be located in the plant. Limestone shall be carried to the plant by trucks.
2	Shale / Clay	From Captive mine			To be transported by trucks
3	Sandstone	Purchase	Limestone deposit areas	Adjacent to 7 km	To be transported by trucks
4	Gypsum	Purchase	Kothakpa, Bhutan	400	To be transported by trucks
5	Mill Scale	Purchase	Guwahati	230	To be transported by trucks
6	Fly ash	From Captive Power Plant	CPP	-	To be transported by conveyors.
7	Coal	Purchase	Wapung	40	To be transported by trucks

### 8.2 Raw Material for CPP

#### 1) Coal

The coal has following properties.

Average Calorific value : 6200 Kcal/kg

Sulphur : 4%

Ash : 16%

- 2) Limestone: Limestone will be required to be fed in boiler along with coal (about 12% of coal by weight) to capture sulphur and thus limiting formation of SO<sub>2</sub> and damage boiler internals. Total annual consumption will be to the tune of 5625 MT, will be met out from the captive mine.

## 9 Water Consumption

### Estimated Water Requirement in Captive Power Plant

S. No.	Description	Turbo – Generator with Air Cooled Condenser				
		Cooling Water m <sup>3</sup> /hr	Once Through Water m <sup>3</sup> /hr	Evaporation & Drift Loss	Blow Down Water m <sup>3</sup> /hr	Make Up water m <sup>3</sup> /hr
1	Auxiliary Cooling Water including Sample Coolers	200	---	2	2	4.00
2	Water De-mineralisation Plant	---	0.25		1.75	2.00
3	Plant Potable & Service Water	---	2		---	2.00
	Total					8 m <sup>3</sup> /hr

It is estimated that a total of 250KL of water will be required for CPP and 282KL for Cement Plant, colony and Captive mine, making of total of 532 KL per day. The source of water will be the spring and rainwater.

## 10. Details of Manpower

### A. Cement Plant:

Cement Plant will operate for 3 shifts. The manpower deployment will be as given below:

<b>Operation Phase:</b>	General shift	–	128
	Shifts	–	137
	Total	–	265

**B) Captive Power Plant:**

The plant will operate for 3 shifts (9.0)

The total technical executives required are around 49 and technical manpower will be 27. The manpower required during implementation phase will be 100.

**11. Cost of the Project**

- a. Cement Plant :The total investment is Rs. 88.08 crores
- b. Captive Power Plant : The total cost is Rs.40.35 crores
- c. Limestone mine (Lease area 4.76 ha): The total cost is Rs. 19.0 crores

**12. Duration of Construction**

The implementation period of cement plant is planned for 18 months from the date of signing/ main machinery order, considering that the pre-project activities are accomplished prior to the award of the main machinery order. Similarly it has been assessed that the Captive Power project shall be commissioned within 15 months from the date of placement of order for the main plant and equipment

**13. Power**

The power requirement for the plant has been estimated as 6MVA. The power requirement will be met by the Captive power plant. The project proponent also have a sanction of 10 MW for 132 KV from MeSEB.

#### **14. Fuel**

Coal is to be used as a fuel for the power plant Several small collieries are in operation in the Bapung and Suruphi coal fields, which are at a distance of 5-10 km from the proposed plant site

#### **15. Waste Water**

There is no wastewater generated from the cement plant primarily domestic effluent will be generated in the colony. About 180KL of domestic wastewater will be generated from the colony and the plant. A STP is proposed to set up to treat the wastewater and use the treated water in green belt, dust suppression, air conditioning etc The process flow diagram is shown in **exhibit no.15.1**

#### **16. Base line Data**

Environmental monitoring was carried out for base line data generation during January 07 – April 07, for **12** weeks. Micrometeorology, Ambient air quality, Water quality, Water flow measurement, Noise level, Soil quality, Socio-economic & Biodiversity studies were carried out within 10 km radius of the site area.

## 17. Environmental impact assessment

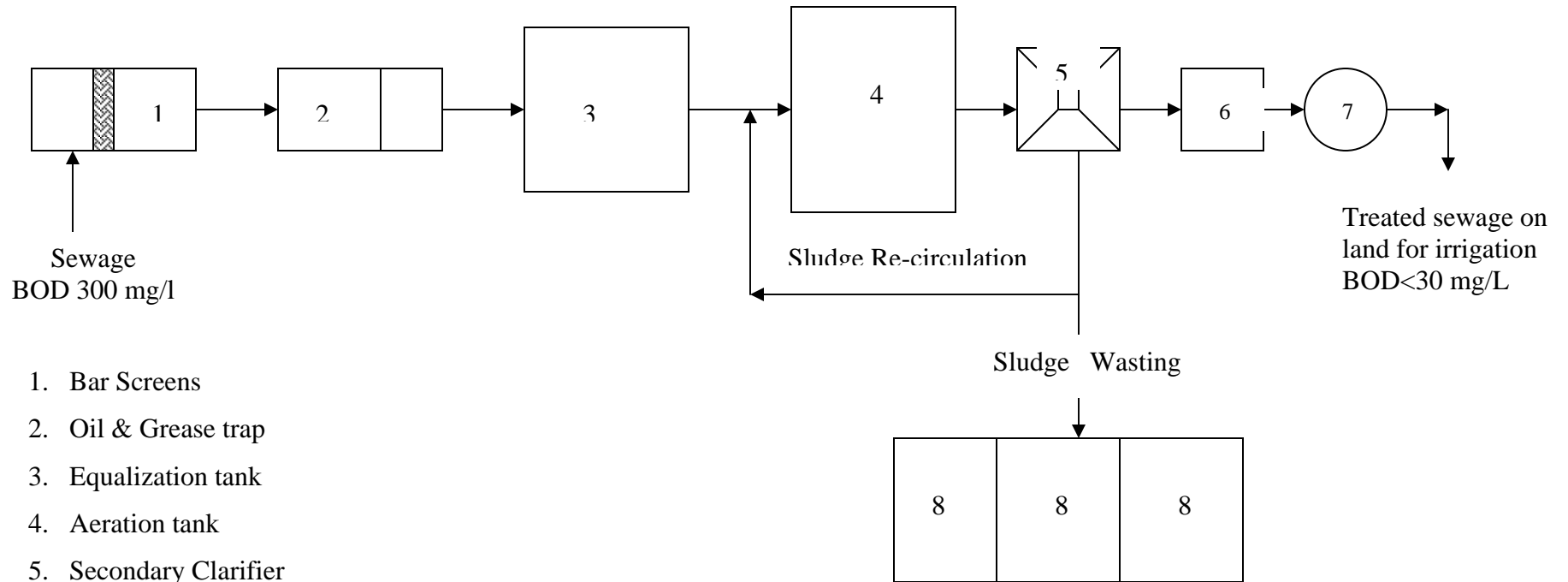
	<b>Existing</b>	<b>Impact due to proposed activity.</b>	<b>Environmental management</b>
Climate	The factors responsible for changes in climate are varied, complex & on global scale.	The activities envisaged will have negligible impact on the climate.	Project authority will initiate control measure like covering construction material stacks during construction phase. Pollution Control measures will be adopted for relevant pollutants in construction phase and for all time.
Land use	New project	The constructions of proposed plant will have certain immediate changes in the land use pattern.	The excavated earth during construction will be utilized to fill up low-lying areas, the rubbish will be cleared. Landscaping & plantation will help in improving the environment and aesthetic beauty of the area.
Soil Quality	New project	No significant adverse impact on the soil in the surrounding area is anticipated except minor localized constructional impact.	The managements will ensure no discharge of effluents or fly ash & dust out side the factory.
Air Quality	New project	During construction phase SPM will be main pollutant, which would be generated from he site development activities & vehicular movement on the road. In operational phase coal grinding section, packing plant, cement grinding, clinker silo, preheater, kiln & cooler & Blending silo are the main sources of dust emission. In CPP, flue gasses from boiler, fly ash from the hopper furnace, bottom ash are the main sources of air pollution	Water sprinkling will be done on regular basis in the months November to March. Bag filters are installed at Raw material storage, raw meal preparation, Blending Silo, Clinker silo, Cement grinding, packing plant, Coal grinding. ESP will be installed at preheater, kiln & cooling processes.

Noise levels	New project	Major noise generating sources are Kiln, raw mill, cement mill, crusher and power plant. In CPP noise generating sources are Turbine generator, high pressure boiler & compressor	The noise generated will be diffused by the natural distance. The noise generating equipment will be covered and acoustic noise suppression measure will be implemented. Earmuffs will provided to the staff working near high noise generating sources.
Water Quality	New project	In operational phase principal of Zero Discharge will be adopted. Rainwater run off may cause turbidity	Proper drainage system will be provided. The rainwater harvesting will be done. No impermissible discharge will be allowed out side factory. All water from DM Plant will be used. Blow down water from boiler, auxiliary cooling tower basin, system leakage water through equipment overflow drain will be used inside the cement plant and factory.
Water requirement & management	New project	Possibility of pollution of water will be minimum during short period of construction phase. 520 KL of makeup water will be required for the cement plant and captive power plant per day. Apart from the above 12 KL of water will be required per day for the mine. The water demand will met from the spring water and rainwater, hence there will be no impact on ground water.	It is proposed to utilize maximum rainwater through a storage reservoir. In cooling equipment process except evaporation loss, the recirculation system will be adopted to ensure minimum water loss. Further air-cooled compressors will be installed to minimize the water use. High-pressure water spray system in Kiln vent gas and usage of maximum quantity of waste gas in drying raw material and coal will reduce the cooling water requirement. It is also proposed to use air cooled condenser instead of water cooled condenser by which consumption of water will be reduced from 75-80 m <sup>3</sup> /hr to only 8 m <sup>3</sup> /hr

Effluent Waste water	New Project	<p>There will be no industrial effluent generated from cement plant</p> <p>There will be no process water generated, as the cement plant will be operated on the dry process. Water is only used at certain stages in the cement mill and raw mills. The whole system is close circuit, hence no scope for process waste water generation. Domestic wastewater will be generated.</p>	<p>Principle of Zero Discharge will be adopted at CPP. All water from Demineralization Plant, where chemicals will be used, shall be properly treated in the neutralization pit and then transferred to the “Common Pit” (CP).</p> <p>Further, all blow down water from Boiler, Auxiliary Cooling Tower basin, System leakage water through Equipment Overflow Drain (EOD) etc. will be Channelised to above mentioned CP.</p> <p>Water from the CP will then be pumped out for Horticulture Dust Suppression Ash Conditioning purposes within the plant area.</p>
Domestic Waste Water	New Project	It is estimated that 180 KL of domestic wastewater will be generated which will be treated.	A STP is proposed to treat the waste water and treated water will be used in green belt, dust suppression, ash conditioning etc
Solid Waste management	New project	No generation of solid waste from cement manufacturing process. Different types of solid wastes are generated from the non-process activities in the unit.	All the non-process solid waste material will be disposed off scientifically in line with guidelines of Meghalaya Pollution Control Board.
Traffic Density	New project	The traffic density during peak hours on the NH-44 was found to be 251/hour.	Transportation of equipment and plying of heavy earth moving machineries will be done to site with proper traffic norms to ensure not to disturb the routine traffic flow of the area during construction phase. During operation phase present infrastructure is sufficient to cop up with marginal increase in traffic.
Flora & Fauna	There is no forest area, wildlife sanctuary in the study area	Impact on flora & fauna is negligible. The site is covered with grass, bushes & few trees. No endangered or rare species are reported.	Project authority will under take plantation over an area of 5.20 acres in phased manner, at a rate of 950 trees per acre.

Socio economic	The Jaintia Hills district of Meghalaya consists of almost exclusively the Khasi tribe and its sub tribes, including the Wars, Bhois & Maram. The War Khasis are predominant in the Southern region of the district.	Due to the coming of this project, job opportunities for the local people will be generated. The near by villages will be developed with facilities like good road network and improve the economic structure of the area.	The project authority will contribute to improve/ encourage Education, Health & Hygiene, Promotion of cultural and social welfare activities, and Training to villagers through self help group development in the nearby villages.
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Line Diagram of Sewage Treatment Plant (180 KLPD)



- 1. Bar Screens
- 2. Oil & Grease trap
- 3. Equalization tank
- 4. Aeration tank
- 5. Secondary Clarifier
- 6. Buffer storage tank
- 7. Pressure Sand filter
- 8. Sludge Drying beds

M/s J U D Cement Pvt. Ltd.  
**AMBIENT AIR QUALITY DATA**  
 FROM 20.01.2007 TO 19.04.2007  
 LOCATION : Inside the factory site  
 STATION : A-1

**Table No.1**

DATE	24 HOURLY				
	RPM	SPM	SO <sub>2</sub>	NO <sub>x</sub>	CO
20.01.07	31.40	131.65	9.35	11.55	BDL
24.01.07	36.15	138.35	9.35	11.35	BDL
27.01.07	39.54	141.60	9.80	12.20	BDL
30.01.07	32.81	121.32	9.95	11.30	BDL
03.02.07	39.35	135.45	9.70	12.40	BDL
06.02.07	36.12	124.40	9.40	12.55	BDL
08.02.07	33.50	122.65	9.35	12.65	BDL
14.02.07	36.65	140.35	9.75	12.35	BDL
17.02.07	37.70	142.45	9.30	11.55	BDL
20.02.07	33.45	126.45	9.85	12.60	BDL
23.02.07	38.40	146.55	7.50	9.70	BDL
27.02.07	31.50	111.34	9.50	10.50	BDL
03.03.07	36.52	136.40	9.45	10.60	BDL
06.03.07	37.65	139.20	9.50	10.70	BDL
09.03.07	33.43	131.25	9.40	9.40	BDL
13.03.07	42.50	145.38	9.50	10.60	BDL
16.03.07	39.95	143.57	9.20	10.55	BDL
20.03.07	33.45	141.20	9.60	11.40	BDL
23.03.07	39.35	131.35	9.35	12.65	BDL
27.03.07	35.45	131.75	9.70	12.60	BDL
30.03.07	31.35	129.33	9.90	11.40	BDL
03.04.07	26.55	120.39	9.70	10.60	BDL
07.04.07	25.33	111.25	9.70	9.60	BDL
10.04.07	24.37	109.37	8.35	9.70	BDL
12.04.07	25.55	103.57	8.60	9.40	BDL
17.04.07	26.58	106.30	8.20	9.20	BDL

	<b>RPM</b>	<b>SPM</b>	<b>SO2</b>	<b>NOX</b>	<b>CO</b>
Number of observations	26	26	26	26	26
Arithmetic Mean	34.02	129.34	9.34	11.12	BDL
Geometric Mean	33.64	128.71	9.33	11.06	BDL
STD. GEO. Devn. (24 hrs)	4.97	12.56	0.56	1.14	NIL
Max. Concentration	42.50	146.55	9.95	12.65	BDL
Min. Concentration	24.37	103.57	7.50	9.20	BDL
Detection Limit (µg/m <sup>3</sup> )					1000

Percentile values

	<b>10</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>60</b>	<b>70</b>	<b>80</b>	<b>90</b>	<b>98</b>
RPM	25.55	26.58	31.50	33.43	33.50	36.15	36.65	38.40	39.35	39.95
SPM	109.37	111.34	122.65	126.45	131.50	135.45	138.33	141.20	142.35	145.38
SO <sub>2</sub>	8.35	9.20	9.35	9.33	9.45	9.50	9.70	9.70	9.80	9.90
NO <sub>x</sub>	9.40	9.70	10.55	10.60	11.30	11.40	11.55	12.40	12.60	12.65

NOTE: ALL VALUES ARE IN µg/m<sup>3</sup>

BDL- BELOW DETECTION LIMIT

M/s J U D Cement Pvt. Ltd.  
**AMBIENT AIR QUALITY DATA**  
 FROM 20.01.2007 TO 19.04.2007  
 LOCATION : Lumshong  
 STATION : A-6

**Table No.6**

DATE	24 HOURLY				
	RPM	SPM	SO <sub>2</sub>	NO <sub>x</sub>	CO
20.01.07	25.50	61.50	8.40	10.70	BDL
24.01.07	23.30	57.60	8.30	10.40	BDL
27.01.07	21.40	59.61	7.60	10.10	BDL
30.01.07	25.70	61.60	7.90	10.60	BDL
03.02.07	27.50	69.70	7.85	11.20	BDL
06.02.07	21.60	66.50	7.24	9.30	BDL
08.02.07	19.70	61.60	6.53	9.60	BDL
14.02.07	20.40	63.50	6.03	9.30	BDL
17.02.07	22.80	69.20	7.16	10.40	BDL
20.02.07	27.40	80.70	8.20	11.70	BDL
23.02.07	25.60	69.60	7.50	11.20	BDL
27.02.07	26.70	80.30	7.40	11.70	BDL
03.03.07	25.40	76.30	7.50	10.40	BDL
06.03.07	23.60	76.80	8.50	10.20	BDL
09.03.07	26.50	79.40	9.40	11.80	BDL
13.03.07	25.60	76.60	8.50	10.40	BDL
16.03.07	26.70	81.50	8.60	10.30	BDL
20.03.07	25.40	71.60	8.70	9.60	BDL
23.03.07	23.50	66.50	8.20	9.40	BDL
27.03.07	24.50	67.40	9.60	10.20	BDL
30.03.07	26.60	65.40	9.40	10.30	BDL
03.04.07	25.50	68.50	9.20	10.40	BDL
07.04.07	21.60	70.40	9.60	11.70	BDL
10.04.07	21.70	60.30	9.10	12.20	BDL
12.04.07	19.60	60.50	8.60	11.30	BDL
17.04.07	20.90	65.00	9.40	11.40	BDL

	<b>RPM</b>	<b>SPM</b>	<b>SO2</b>	<b>NOX</b>	<b>CO</b>
Number of observations	26	26	26	26	26
Arithmetic Mean	24.03	68.75	8.25	10.61	BDL
Geometric Mean	23.90	68.39	8.19	10.58	BDL
STD. GEO. Devn. (24 hrs)	2.44	7.12	0.93	0.82	NIL
Max. Concentration	27.50	81.50	9.60	12.20	BDL
Min. Concentration	19.60	57.60	6.03	9.30	BDL
Detection Limit ( $\mu\text{g}/\text{m}^3$ )					1000

Percentile values

	<b>10</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>60</b>	<b>70</b>	<b>80</b>	<b>90</b>	<b>98</b>
RPM	20.40	21.40	21.70	23.30	24.50	25.50	25.60	26.50	26.70	27.40
SPM	60.30	61.50	63.50	65.40	67.40	69.60	70.40	76.60	79.40	80.70
SO <sub>2</sub>	7.16	7.40	7.60	7.90	8.30	8.50	8.60	9.20	9.40	9.60
NO <sub>x</sub>	9.40	9.60	10.20	10.30	10.40	10.60	11.20	11.40	11.70	11.80

NOTE: ALL VALUES ARE IN  $\mu\text{g}/\text{m}^3$

BDL- BELOW DETECTION LIMIT

M/s J U D Cement Pvt. Ltd.  
**AMBIENT AIR QUALITY DATA**  
 FROM 20.01.2007 TO 19.04.2007  
 LOCATION : TONGSENG VILLAGE  
 STATION : A-4

**Table No.3**

DATE	24 HOURLY				
	RPM	SPM	SO <sub>2</sub>	NO <sub>x</sub>	CO
20.01.07	26.40	85.30	11.40	13.20	BDL
24.01.07	25.30	100.30	11.30	13.20	BDL
27.01.07	24.50	89.50	11.50	13.10	BDL
30.01.07	25.30	101.32	9.40	12.30	BDL
03.02.07	33.80	88.10	10.20	11.30	BDL
06.02.07	26.40	88.40	10.60	11.20	BDL
08.02.07	25.30	106.90	10.35	11.30	BDL
14.02.07	31.60	85.50	9.60	13.90	BDL
17.02.07	33.20	90.60	9.50	13.20	BDL
20.02.07	31.10	103.80	9.60	11.70	BDL
23.02.07	33.40	106.40	8.50	11.60	BDL
27.02.07	27.90	83.10	8.40	12.30	BDL
03.03.07	27.60	81.30	7.90	12.70	BDL
06.03.07	26.70	79.30	7.60	9.50	BDL
09.03.07	25.60	79.20	8.60	9.50	BDL
13.03.07	26.80	103.60	9.60	10.50	BDL
16.03.07	25.90	80.30	9.30	11.30	BDL
20.03.07	21.60	81.30	8.60	10.30	BDL
23.03.07	21.60	81.10	8.40	9.30	BDL
27.03.07	29.60	76.60	9.70	10.40	BDL
30.03.07	29.30	73.30	9.30	11.20	BDL
03.04.07	23.70	61.40	8.30	11.30	BDL
07.04.07	21.30	61.30	9.90	12.30	BDL
10.04.07	21.30	63.20	9.20	11.30	BDL
12.04.07	19.10	54.90	8.30	11.10	BDL
17.04.07	21.30	53.40	9.50	11.50	BDL

	<b>RPM</b>	<b>SPM</b>	<b>SO2</b>	<b>NOX</b>	<b>CO</b>
Number of observations	26	26	26	26	26
Arithmetic Mean	26.37	83.05	9.41	11.56	BDL
Geometric Mean	26.07	81.59	9.35	11.49	BDL
STD. GEO. Devn. (24 hrs)	4.00	15.20	1.03	1.20	NIL
Max. Concentration	33.80	106.90	11.50	13.90	BDL
Min. Concentration	19.10	53.40	7.60	9.30	BDL
Detection Limit ( $\mu\text{g}/\text{m}^3$ )					1000

Percentile values

	<b>10</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>60</b>	<b>70</b>	<b>80</b>	<b>90</b>	<b>98</b>
RPM	21.30	21.60	24.50	25.30	25.90	26.70	27.60	29.60	31.60	33.40
SPM	61.30	63.20	79.20	80.30	81.30	85.50	88.40	100.30	103.60	106.40
SO <sub>2</sub>	8.30	8.40	8.60	9.20	9.40	9.60	9.60	10.20	10.60	11.40
NO <sub>x</sub>	9.50	10.40	11.20	11.30	11.30	11.60	12.30	12.70	13.20	13.20

NOTE: ALL VALUES ARE IN  $\mu\text{g}/\text{m}^3$

BDL- BELOW DETECTION LIMIT

M/s J U D Cement Pvt. Ltd.  
**AMBIENT AIR QUALITY DATA**  
 FROM 02.01.2007 TO 19.04.2007  
 LOCATION : Umlong  
 STATION : A-3

**Table No.4**

DATE	24 HOURLY				
	RPM	SPM	SO <sub>2</sub>	NO <sub>x</sub>	CO
20.01.07	29.30	136.30	11.10	13.00	BDL
24.01.07	46.10	141.30	12.30	15.00	BDL
27.01.07	33.40	149.50	10.30	12.00	BDL
30.01.07	36.60	124.60	9.40	11.00	BDL
03.02.07	33.80	133.70	11.20	13.00	BDL
06.02.07	33.20	113.40	12.10	14.00	BDL
08.02.07	40.80	151.80	10.40	12.00	BDL
14.02.07	30.60	161.30	11.20	13.00	BDL
17.02.07	40.50	176.30	12.30	14.00	BDL
20.02.07	34.70	161.20	11.00	14.00	BDL
23.02.07	26.80	125.70	9.40	13.00	BDL
27.02.07	33.30	125.60	11.30	15.00	BDL
03.03.07	36.40	151.40	12.90	14.00	BDL
06.03.07	29.80	166.70	11.60	15.00	BDL
09.03.07	36.90	147.80	11.50	14.00	BDL
13.03.07	33.50	131.50	12.30	14.00	BDL
16.03.07	40.10	121.20	11.70	15.00	BDL
20.03.07	37.50	131.70	11.60	13.00	BDL
23.03.07	26.30	111.60	9.60	11.00	BDL
27.03.07	29.70	141.90	9.70	12.00	BDL
30.03.07	31.40	161.40	11.20	14.00	BDL
03.04.07	29.60	141.70	11.30	15.00	BDL
07.04.07	29.80	131.30	12.30	13.00	BDL
10.04.07	29.70	121.70	9.80	11.00	BDL
12.04.07	26.50	111.20	10.60	12.00	BDL
17.04.07	26.80	101.20	11.60	13.10	BDL

	<b>RPM</b>	<b>SPM</b>	<b>SO2</b>	<b>NOX</b>	<b>CO</b>
Number of observations	26	26	26	26	26
Arithmetic Mean	33.20	137.42	11.14	13.27	BDL
Geometric Mean	32.84	136.14	11.10	13.21	BDL
STD. GEO. Devn. (24 hrs)	4.98	18.76	0.97	1.26	NIL
Max. Concentration	46.10	101.20	12.90	15.00	BDL
Min. Concentration	26.30	136.30	9.40	11.00	BDL
Detection Limit ( $\mu\text{g}/\text{m}^3$ )					1000

Percentile values

	<b>10</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>60</b>	<b>70</b>	<b>80</b>	<b>90</b>	<b>98</b>
RPM	26.80	29.30	29.70	29.80	33.20	33.50	34.70	36.90	40.10	40.80
SPM	149.50	133.70	161.30	161.20	151.40	131.50	131.70	161.40	131.30	111.20
SO <sub>2</sub>	9.60	9.80	10.60	11.10	11.20	11.50	11.60	12.10	12.30	12.30
NO <sub>x</sub>	11.00	12.00	13.00	13.00	13.00	14.00	14.00	14.00	15.00	15.00

NOTE: ALL VALUES ARE IN  $\mu\text{g}/\text{m}^3$  BDL- BELOW DETECTION LIMIT

M/s J U D Cement Pvt. Ltd.  
**AMBIENT AIR QUALITY DATA**  
 FROM 20.01.2007 TO 19.04.2007  
 LOCATION : Umrasong  
 STATION : A-5

**Table No.5**

DATE	24 HOURLY				
	RPM	SPM	SO <sub>2</sub>	NO <sub>x</sub>	CO
20.01.07	36.35	106.70	9.60	10.40	BDL
24.01.07	39.50	11.20	10.60	11.40	BDL
27.01.07	37.50	105.60	10.40	11.20	BDL
30.01.07	43.40	111.80	10.20	12.30	BDL
03.02.07	39.60	103.60	10.90	11.70	BDL
06.02.07	33.30	106.50	10.20	12.30	BDL
08.02.07	29.80	81.90	10.50	11.90	BDL
14.02.07	29.50	86.20	10.70	13.60	BDL
17.02.07	31.40	85.30	9.30	12.70	BDL
20.02.07	31.60	81.40	10.40	11.20	BDL
23.02.07	36.40	76.80	8.40	11.30	BDL
27.02.07	31.25	91.40	7.40	10.40	BDL
03.03.07	29.40	91.80	9.30	10.50	BDL
06.03.07	26.50	93.20	9.20	9.40	BDL
09.03.07	39.70	91.60	10.50	11.20	BDL
13.03.07	39.60	85.20	9.40	11.10	BDL
16.03.07	36.38	86.60	10.90	12.30	BDL
20.03.07	31.90	81.64	9.30	11.50	BDL
23.03.07	36.20	86.70	10.70	11.70	BDL
27.03.07	38.40	91.70	8.60	11.30	BDL
30.03.07	36.70	86.70	8.80	10.30	BDL
03.04.07	33.90	81.20	8.60	10.40	BDL
07.04.07	26.70	78.50	8.20	10.60	BDL
10.04.07	21.20	79.50	9.60	11.80	BDL
12.04.07	25.60	80.40	9.20	11.70	BDL
17.04.07	26.70	90.40	9.70	12.50	BDL

	<b>RPM</b>	<b>SPM</b>	<b>SO2</b>	<b>NOX</b>	<b>CO</b>
Number of observations	26	26	26	26	26
Arithmetic Mean	33.40	86.67	9.64	11.41	BDL
Geometric Mean	32.95	82.35	9.59	11.38	BDL
STD. GEO. Devn. (24 hrs)	5.38	18.37	0.92	0.89	NIL
Max. Concentration	43.40	111.80	10.90	13.60	BDL
Min. Concentration	21.20	11.20	7.40	9.40	BDL
Detection Limit ( $\mu\text{g}/\text{m}^3$ )					1000

Percentile values

	<b>10</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>60</b>	<b>70</b>	<b>80</b>	<b>90</b>	<b>98</b>
RPM	26.50	26.70	29.80	31.40	33.30	36.35	36.40	38.40	39.60	39.70
SPM	78.50	80.40	81.64	85.20	86.60	90.40	91.60	93.20	105.60	106.70
SO <sub>2</sub>	8.40	8.60	9.20	9.30	9.60	10.20	10.40	10.50	10.70	10.90
NO <sub>x</sub>	10.40	10.40	11.10	11.20	11.30	11.70	11.70	12.30	12.30	12.70

NOTE: ALL VALUES ARE IN  $\mu\text{g}/\text{m}^3$

BDL- BELOW DETECTION LIMIT

M/s J U D Cement Pvt. Ltd.  
**AMBIENT AIR QUALITY DATA**  
 FROM 20.01.2007 TO 19.04.2007  
 LOCATION : Wahiajer  
 STATION : A-2

**Table No.2**

DATE	24 HOURLY				
	RPM	SPM	SO <sub>2</sub>	NO <sub>x</sub>	CO
20.01.07	41.80	139.60	11.20	11.30	BDL
24.01.07	46.70	139.50	11.50	12.30	BDL
27.01.07	43.45	136.50	12.30	12.20	BDL
30.01.07	41.70	138.60	11.40	11.80	BDL
03.02.07	44.30	161.10	11.30	15.30	BDL
06.02.07	45.50	155.00	10.70	11.40	BDL
08.02.07	41.80	141.70	10.50	12.30	BDL
14.02.07	39.70	146.25	10.50	15.30	BDL
17.02.07	39.60	141.35	12.60	14.70	BDL
20.02.07	36.80	131.40	11.40	15.40	BDL
23.02.07	37.20	136.80	12.30	14.20	BDL
27.02.07	42.60	141.25	11.30	13.20	BDL
03.03.07	43.40	131.20	11.50	15.60	BDL
06.03.07	46.20	131.60	10.35	14.40	BDL
09.03.07	41.35	131.70	10.60	13.60	BDL
13.03.07	39.80	136.50	10.90	11.90	BDL
16.03.07	37.60	139.20	9.60	12.70	BDL
20.03.07	36.80	141.60	10.60	12.90	BDL
23.03.07	42.50	146.90	12.40	13.80	BDL
27.03.07	41.50	151.60	11.50	14.60	BDL
30.03.07	39.70	141.35	12.40	12.40	BDL
03.04.07	39.30	151.70	11.50	15.25	BDL
07.04.07	31.60	121.60	11.90	16.20	BDL
10.04.07	23.30	111.40	10.30	13.20	BDL
12.04.07	26.50	116.80	10.20	11.60	BDL
17.04.07	29.70	111.90	10.80	12.30	BDL

	RPM	SPM	SO <sub>2</sub>	NO <sub>x</sub>	CO
Number of observations	26	26	26	26	26
Arithmetic Mean	39.25	137.47	11.21	13.46	BDL
Geometric Mean	38.76	136.93	11.19	13.38	BDL
STD. GEO. Devn. (24 hrs)	5.70	11.92	0.77	1.46	NIL
Max. Concentration	46.70	161.10	12.60	16.20	BDL
Min. Concentration	23.30	111.40	9.60	11.30	BDL
Detection Limit ( $\mu\text{g}/\text{m}^3$ )					1000

Percentile values

	10	20	30	40	50	60	70	80	90	98
RPM	29.70	36.80	37.60	39.60	39.80	41.70	41.80	43.40	44.30	46.20
SPM	116.80	131.20	131.70	136.50	139.20	141.25	141.35	146.25	151.60	155.00
SO <sub>2</sub>	10.30	10.50	10.60	10.80	11.30	11.40	11.50	11.90	12.30	12.40
NO <sub>x</sub>	11.60	11.90	12.30	12.40	13.20	13.80	14.40	15.25	15.30	15.60

ALL VALUES ARE IN  $\mu\text{g}/\text{m}^3$

BDL- BELOW DETECTION LIMIT



## WATER QUALITY RESULTS

Project : M/s J U D Cement Pvt. Ltd.

State

: Meghalaya

Sampling Location : Lunar/ Lyber river (W-3)

Season : Winter

Date of Collection : 20.01.07

Date of Analysis : 20.01.07 to 27.01.07

**Table No.9**

Sl. No.	Parameter	Results	IS - 2296 Class C
1	pH	7.20	6.5-8.5
2	Colour (Hazen Units)	<5	300.00
3	Conductivity at 25 °C (µmhos/cm)	152.0	-
4	Dissolved Oxygen (mg/l)	5.80	4.00
5	Biochemical Oxygen Demand (mg/l)	2.30	3.00
6	Total Dissolved Solids (mg/l)	45.00	1500.00
7	Total Suspended Solids (mg/l)	12.00	-
8	Oil & Grease (mg/l)	Nil	-
9	Chlorides as Cl (mg/l)	8.40	600.00
10	Boron as B (mg/l)	<0.01	
11	Sulphate as SO <sub>4</sub> (mg/l)	20.00	400.00
12	Nitrate as NO <sub>3</sub> (mg/l)	0.08	50.00
13	Free Ammonia as N (mg/l)	<0.01	-
14	Arsenic as As (mg/l)	<0.01	0.20
15	Iron as Fe (mg/l)	0.07	50.00
16	Fluorides as F (mg/l)	0.40	1.50
17	Lead as Pb (mg/l)	<0.01	0.10
18	Copper as Cu (mg/l)	<0.01	1.50
19	Zinc as Zn (mg/l)	0.14	15.00
20	Total Coliform organisms (MPN/100ml)	21	5000.00

## WATER QUALITY RESULTS

Project : M/s J U D Cement Pvt. Ltd.

State

: Meghalaya

Sampling Location : Umthing Spring (W-2)

Season : Winter

Date of Collection : 20.01.07

Date of Analysis : 20.01.07 to 27.01.07

**Table No. 8**

Sl. No.	Parameter	Results	IS - 2296 Class C
1	pH	6.80	6.5-8.5
2	Colour (Hazen Units)	<5	300.00
3	Conductivity at 25 °C (µmhos/cm)	32.0	-
4	Dissolved Oxygen (mg/l)	6.00	4.00
5	Biochemical Oxygen Demand (mg/l)	1.80	3.00
6	Total Dissolved Solids (mg/l)	20.00	1500.00
7	Total Suspended Solids (mg/l)	8.00	-
8	Oil & Grease (mg/l)	Nil	#VALUE!
9	Chlorides as Cl (mg/l)	5.00	600.00
10	Boron as B (mg/l)	<0.01	
11	Sulphate as SO <sub>4</sub> (mg/l)	1.20	400.00
12	Nitrate as NO <sub>3</sub> (mg/l)	0.06	50.00
13	Free Ammonia as N (mg/l)	<0.01	-
14	Arsenic as As (mg/l)	<0.01	0.20
15	Iron as Fe (mg/l)	0.062	50.00
16	Fluorides as F (mg/l)	0.34	1.50
17	Lead as Pb (mg/l)	<0.01	0.10
18	Copper as Cu (mg/l)	<0.01	1.50
19	Zinc as Zn (mg/l)	0.12	15.00
20	Total Coliform organisms (MPN/100ml)	11	5000.00

## WATER QUALITY RESULTS

Project : J.U.D Cement Pvt. Ltd.

State

: Meghalaya

Sampling Location : Upliang Spring (W-1)

Season : Winter

Date of Collection : 20.01.07

Date of Analysis : 20.01.07 to 27.01.07

**Table No.7**

Sl. No.	Parameter	Results	IS - 2296 Class C
1	pH	7.20	6.5-8.5
2	Colour (Hazen Units)	<5	300.00
3	Conductivity at 25 °C (µmhos/cm)	35.0	-
4	Dissolved Oxygen (mg/l)	6.20	4.00
5	Biochemical Oxygen Demand (mg/l)	1.60	3.00
6	Total Dissolved Solids (mg/l)	15.00	1500.00
7	Total Suspended Solid (mg/l)	8.00	-
8	Oil & Grease (mg/l)	Nil	-
9	Chlorides as Cl (mg/l)	2.00	600.00
10	Boron as B (mg/l)	<0.01	
11	Sulphate as SO <sub>4</sub> (mg/l)	1.50	400.00
12	Nitrate as NO <sub>3</sub> (mg/l)	0.08	50.00
13	Free Ammonia as N (mg/l)	<0.01	-
14	Arsenic as As (mg/l)	<0.01	0.20
15	Iron as Fe (mg/l)	0.080	50.00
16	Fluorides as F (mg/l)	0.35	1.50
17	Lead as Pb (mg/l)	<0.01	0.10
18	Copper as Cu (mg/l)	<0.01	1.50
19	Zinc as Zn (mg/l)	0.16	15.00
20	Total Coliform organisms (MPN/100ml)	11	5000.00