

THE SINGARENI COLLIERIES COMPANY LIMITED (A GOVERNMENT COMPANY) <u>BHUPALPALLI AREA</u>

Ref.No.BHP /ENV/Env Stmnt/2024/ \$9

Date: 28.08.2024

To The Member Secretary, T. G. Pollution Control Board, Paryavaran Bhavan, A-3, Industrial Estate, Sanatnagar, <u>Hyderabad-500018</u>

Dear Sir,

Sub: Environmental statement pertaining to KTK OC-III Project of SCCL for the year 2023-24–Reg.

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With reference to the above cited subject, please find enclosed here with the Environmental statement pertaining to KTK OC-III project of Bhupalpalli area SCCL for the year 2023-24.

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Thanking you,

Yours faithfully,

General Manager Bhupalpalli Area.

Encl.: As above Cc to:

The Environmental Engineer, T.G.Pollution Control Board, R/O.Hanamkonda Warangal (dist.)



ENVIRONMENTAL STATEMENT OF KTK OC-III PROJECT SCC Ltd, BHUPALPALLI AREA FOR THE FINANCIALYEAR 2023- 24

Brief Note about KTK-OC III PROJECT:

INTRODUCTION

KTK Opencast–III Project, with a core zone of 1336.64 Ha is proposed in the central part of Mulugu Coal belt of Godavari Valley Coalfield. The project is located in Ghanpur mandal of Jayashankar Bhupalpalli District. This project also includes reconstruction of underground workings of Kakatiya long wall Project.

The present proposal is conversion of Kakatiya Long wall Project (KLP), which is carved out of Gollapalli, Peddapur geological blocks into opencast mine also by annexing part of Gollapalli Dip side Geological block up to 300m depth of V seam.

This project is located on the Southeast of Bhupalpalli and is well connected by 12km all weather road to Bhupalpalli, the District Headquarters. Parkal-Mahadevpur state highway is located in the Northwestern side of the proposed project at a distance of 3.60 km connecting Warangal — Godavarikhani - Karimnagar. The nearest railhead is Uppal Railway Station located on the Balharshah-Kazipet section of South Central Railway and is located at a distance of about 55 km by road from the proposed project area.

The hydro geological environment of the area within the buffer zone of 10km radius from the edge of KTK OC-III Project (as per MoEF Guidelines) (488.69 sq.km.) has also been studied with the objective of estimating the net recharge, current gross ground water draft, net surplus water availability and the impact of the proposed KTK OC-III project on ground water environment of the area. For this purpose, the groundwater potentiality of the study area has been estimated as per Groundwater resource Estimation Committee (GEC)-1997 suggested methodology.

SITE LOCATION:

Kakatiya Khani OC III project, a mixed / integrated project (Open cast cum underground), is carved out of Gollapalli-Peddapur –Laxmidevipeta Geo -Mining Zone of Mulugu Coal Belt. TheProject is located in the Central part of the Mulugu coal-belt in the Godavari Valley Coal Field and forms part of Bhupalpalli Area of SCCL. The block is falling in the Ghanpur Mandal of Jayashankar Bhupalpalli district of Telangana State.

KTK OC-III Project is located near Baswarajupalli village of Ghanpur Mandal in Jayashankar Bhupalpalli district of Telangana State. The project area is covered under Survey of India Top sheet No. 56N/15 and bounded by North latitudes 18°19'40" to 18°22' 56" and East Longitude 79°52'42" to 79°55'30".

Climate:

The area experiences typical tropical climate of a distinct hot summer from March to June with occasional dust storms, a good monsoon between July and October and a pleasant winter from November to February.

The micro-meteorological study was carried out during winter season. The maximum wind speed recorded was 10.3 m/s. Calm conditions prevailed is for 18.95 % of the time during this period. The predominant wind direction was blowing from North East (NE) direction followed by East North East (ENE) direction. The maximum temperature and humidity recorded during this period were 38.4° C and 99.9° , while the minimum recorded were found to be 11.9° C and 17.0° and the average temperature and humidity values were 22.6° C and 66.3° . The total rainfall observed during study period is found to be 15.3 mm.

Season	Months	Characteristics
Summer	March – May	Hottest part of the year, occurrence of dust storms
South-West monsoon	June – Sep	Characterized by predominantly SW winds. Generally strong and persistent winds prevail.
North-East monsoon	Oct – Nov	Characterized by predominantly NE winds. Fair weather with the variable winds.
Winter	Dec – Feb	Cool season of the year

Seasons of the region:

Topography:

The topographic elevation of the project area varies from 209.65m to 190m above MSL with a gentle slope towards South. Due to mining operations the topography & landscape and its immediate vicinity in the mine lease area will be affected and the area will become a depression in mine working zone.

KTK OC-III Project is located near Baswarajupalli village of Ghanpur Mandal in Jayashankar Bhupalpalli district of Telangana State. The project area is covered under Survey of India Top sheet No. 56N/15 and bounded by North latitudes 18° 19' 40" to 18°22' 56" and East Longitude 79° 52' 42" to 79° 55' 30".

Township:

The employees of the project were provided residential accommodation in common townships namely 1000 quarters, Ramappa colony, Krishna Colony and MD Quarters in Bhupalpalli area.

Process involved in coal production: \

Several design constraints combine to restrict the choice of primary excavation equipment & coal winning technology. Under the prevailing geomining conditions, with multiple seams, it is proposed to mine the coal using shoveldumper combination which is considered most suitable. The mining sequence has been planned in such a way as to permit mining the coal reserves in a more effective manner and at the same time allows backfilling of considerable quantity of overburden. This aspect considerably mitigates the adverse environmental impact generally associated with opencast mining. Sequence of mining is also planned considering the lay and disposition of the deposit

In this proposed project, the main haul road is planned at Southeast side of the proposed quarry. The pit progress will be in the dip direction during the years of operation to create space for internal dumping as the seams are steeply dipping. Internal dumping will commence from the beginning of 8th year. The progress of the quarry will be in strike direction from the beginning of 8th year.

In general, the sequence of mining operations in any semimechanized underground coal mine like KTK OC-III UG Mine, involves development of galleries up to the mine boundary and retreating by depillaring by caving method (Final Extraction). After the completion of development, panel wise depillaring will be done. The panels are so formed that the final extraction of each panel can be completed within the incubation period.

KTK OC-III underground mine is planned to extract the blocked reserves in the high wall batters of KTK OC - III Project. As the mine already exists the development activities are already commenced in the proposed area.

In view of depillaring by caving method, top down sequence of extraction will be followed. Initially, more number of SDLs will be deployed in top most seam earmarked for extraction by UG Method, i.e. 1 Seam, such that development in that seam up to envisaged boundary is completed at least one year before completion of development workings in 2 seam followed by gap of 1 year for completion of development workings in 3 seam. During depillaring, panels in 1 seam will be extracted first such that depillaring workings in 1 seam are at least one panel ahead of workings in 2 Seam. Similarly, depillaring workings in 2 Seam will be planned such that they are at least one panel ahead of depillaring workings in No.3 Seam. Further the underground workings are planned keeping in view of maintaining safe distance (300 m) from the extraction limit of proposed KTK OC - III.

Sequence of coal winning operations in the operating UG mine are as furnished below.

- Drilling and blasting of coal faces.
- Coal loading by SDLs in to tubs.
- Hauling up of the loaded tubs by haulers to the surface bunker

For OB excavation the equipment will be deployed on a horizontal plane and their movement will be along a particular horizon as the equipment is not able to stand/work along the inclined plane where inclination is more than 1 in 3. The mining area will be divided into no of horizons with a height of 10 m each. The OB will be removed by deploying hired HEMM (shovels and other HEMM) in each horizon.

The scope of work for OB removal as per offloading order is as follows:

- Blast hole drilling and blasting.
- Excavation
- Loading, transportation, dumping of OB and
- loading & transportation of coal to pit head CHP / Crusher.

Preparation of roads, ramps, dozing, leveling, garland drains and other EMP works will bein the scope of the contract. Explosives, accessories and diesel will be supplied by SCCL.

Industrial activities within 10 km radius:

- SCCL: Underground mines (KTK 1 INC, KTK 5INC, KTK 6INC) and opencast mine KTK OC-2 of SCCL, Area Stores, workshop etc.
- Other than SCCL, 1100 MW Power Plant of TSGENCO.
- Pottery Kilns, Tiles Kilns etc., of private parties.

Land use areas: pattern in the surrounding:

Industrial, agricultural lands both wet and dry waste lands and fallow lands, settlements, residential colonies, tanks and nallahs, roadways.

The major sources of water for irrigation in this area are tanks, nallahs, mine discharge water etc.

FORM - V (RULE NO.14 OF EPR 1986)

Environmental statement of Bhupalpalli area of KTK Opencast-III Project for the year 2023-24

PART – A

General:

SI. No.	ltem	Details
1	Name & address of the Owner Occupier of the industry/operation or process	Project Officer, KTKOC-III Project, Bhupalpalli Area, The S.C.Co.Ltd.,
		Ghanpur mandal
		P.O: Jayashankar Bhupalpally
		District: Jayashankar Bhupalpalli - 506 169
2	Industry category	Primary , Coal Mines (Red-Non Hazardous)
3	Production capacity	3.75 MTPA (peak)
4	Year of establishment	2019-20 (PROJECT)
5	Date of last Environmental statement submitted	21.09.2023

SI. No.	ltem	2019- '20 (ONLY UG)	2020- 2021	2021-2022	2022-23	2023-24
1	Total coal production (in L. Tons)	2.785	2.225	5,60,008	9,69,820	15,35,698
2	Output per man shift	0.88	0.81	14.31	27.68 (Departmental)	39.66 (Departmental)
3	Total men on roll	1511	1423	1185	1172	1258

Water and Raw material consumption.

A. <u>Water Consumption</u>:

SI.	Description	2023-2024
No.		
1	Name of the Product	Coal
2	Water consumed for 1000 T of Coal, in KLD	0.41

Raw Material Consumed to Total Project during the year 2023-2024:

SI. Description/Consumption		OC SECT	OC SECTION		TOTAL
NO		Off.loading M/s SVEC.	Dept. SCCL	Section	Project
	i) Explosives used for coal, kgs	NIL		P5- 1,06,025	P5-1,06,025
	ii) Explosives for OB, kgs	NIL	2,07,33,700	NIL	2,07,33,700
1	iii) Detonators, No's	NIL	2591 (Ordinary)	1,96,549 (Delay)	Ordinary- 2591
					Delay- 1,96,549
	iv) Nonels, No's	NIL	5,63,170	NIL	5,63,170
	v) Boosters , in Kgs	NIL	44,203.7	NIL	44,203.7
	i. Gear oil of all types, Its	6890	NIL	Nil	6890
	ii. Hydraulic oil of all types,	1,23,175	NIL	Nil	1,23,175
	iii. Axle oil, Its	14605	NIL	NIL	14605
2	iv. Steering oil, Its	1770	NIL	NIL	1770
	v. Transmission oil, Its	25145	NIL	Nil	25145
	vi. Engine oil, Its	72,575	NIL	NIL	72,575
	vii. Drive oil, Its	5615	NIL	NIL	5615
	viii. H.S.D oil, Its	NIL	3,48,560	nil	3,48,560
	ix. Petrol oil ,lts	NIL	NIL	210	9640

	x. Lubrication oils	NIL	NIL	9640	355
	xi. ENDO 68 OIL	NIL	NIL	355	
3	Grease of different grades, kgs	82,250	NIL	nil	82250
4	Tyres of different sizes	NIL	NIL	NIL	NIL
5	Paints of different types i. Enamel paint, Its ii. Red oxide paint, (KGS)	NIL NIL	NIL NIL	nil nil	nil nil
6	Timber of all types, Cu. mts	NIL	NIL	nil	nil
7	Cement, Bags kgs	NIL	NIL	1550	1550
8	Girders, MTN	NIL	NIL	nil	nil
9	Rails, MTN	NIL	NIL	nil	nil
10	Roof bolts and nuts, No's	NIL	NIL	23,700	23,700
12	Dog nails, No's	NIL	NIL	4603	4603
13	Tub pedestrails, No's	NIL	NIL	300	300
14	Drill Bit, No's	860	NIL	4122 (Coal) 2324	4122 (Coal) 2324
	Drill rods. No's		NIL	(stone) 6feet- 202	(stone) 15 Feet-103
15 a)		15 Feet-103 5 Feet -127		4feet- 243	5 Feet -127 6feet- 202 4feet- 243
15 b)	Bolter drill rods	nil	nil	1200mm length- 39 1800mm length-30 600mm length-144	1200mm length- 39 1800mm length-30 600mm length-144
16	CI Pipes, MT	NIL	NIL	NIL	NIL
17	GI Pipes, MT	NIL	NIL	NIL	NIL
18	Inorganic Capsules, No's	NIL	NIL	33100	33,100
20	Conveyor belt, mts	NIL	NIL	nil	nil
21	Cane baskets , No's	NIL	NIL	394	394
22	Haulage rope, Mtrs	NIL	NIL	22mm- 15000	22mm- 15000

			26mm-	26mm-
			44000	44000
23	Electric power in KWH	 		1,16,15,031

Note: Raw material consumption like explosives, diesel oil, electric power and others are depend up on the stripping ratio, depth of coal reserves under earth cover, inclination of the seams, nature of rock strata, distance of coal handling plant from the mine, method of working and technology adopted etc., hence raw material consumption varies from mine to mine and time to time.

- (C) Energy and Resource conservation measures:
 - 1. Switching off lights and fans in the Offices and outside when not required.
 - 2. By using capacitors to improve the power factor.
 - 3. Using FLP Lamps and Tubes in Office rooms and colonies for saving electrical energy.
 - 4. UG sub-stations were shifted to nearer to the districts to reduce cable Lengths.
 - 5. Using 5 star rated appliances in quarters.
- (D) Steps taken for conservation of oil and grease:
 - 1. Using funnels for oil filling to prevent ingress of foreign matter.
 - 2. Markings were given for minimum and maximum oil level to maintain temperatures and bearings.
 - 3. Color code being followed for different lubricants.
 - 4. Reusing the oils for lubricating the coal tubs.
- (E) Waste material generated and waste management practices:
 - 1. Old rope used for fencing, roof stitching, side stitching and rope ladders where ever required.
 - 2. Conveyor belt used for making belt canisters to carry detonators.
 - 3. Iron scrap is being sent to Area Stores.
 - 4. The old conveyor belt is used for ventilation coursing in the district.
 - 5. The old chock timber is being used for construction of ladders in travelling roads, in last Ventilation connections and dip/rise working places.
 - 6. Stock yard provided for storing of Pit materials.

(F) <u>WELFARE MEASURES TAKEN</u> :	<u>As on 31.03.2024</u>
(a) Total No. of employees on roll as on 31.03.2024:	: 1258
(b) Total No. of employees provided quarters facilities	: 950
(c) Total No. of employees using LPG gas	: 1258
(d) Total No. of employees provided with Bank payments	: 1258
(e) Total No. of employees undergone family planning oper	ration : 645
(f) Total No. of employees undergone PME during last 6 m	onths : 60
(g) Total No. of employees took part in games/sports durin	g last 6 months: 15
(h) Total No. of employees using any other facilities (PI. Sp	pecify) :

PART – C

POLLUTION GENERATED

Air pollution control measures.

Main sources of air pollution are drilling and blasting operations, loading and unloading operations of coal and over burden, exhausting gases from the Heavy Earth Moving Machinery (HEMM), coal transportation vehicles, coal handling operations at the coal handling plants, coal heaps and OB dumps.

The ambient air quality status in and around the mining area during the year is furnished in **Annexure-I** enclosed herewith.

Arrangements for dust suppression:

- Eight 20 KL Water tankers are used for dust suppression of quarry haul roads, dump yards and Surface haul roads of Contractor. One outsourcing 12KL and SCCL 28KLwater tankers for water spraying along coal transport roads.
- In the coal yard, Crusher is provided with water sprinklers all along the belt and a cloud tech mist sprayer is provided at the discharge point in order to control the dust.
- To avoid spillage of coal, every lorry being given adequate coal and being levelled before leaving mine premises. Tarpaulin is being covered over lorries.
- Restricting the coal heaps up to 1.5m height and water spraying arrangements are being done.
- Ensuring every lorry covered with tarpaulin before leaving the mine after loading coal from pre-weigh bin.
- Approach roads to the office buildings and service buildings are black topped.
- Height of fall of material is kept minimum at transfer points of conveyors. Haul distances are kept to the minimum possible.
- NONELS are being used to reduce ground vibrations and fly rock.
- Employees are being provided with free LPG gas cylinders instead of coal to discourage coal burning for domestic use. All employees are using LPG gas in place of coal.
- All drills (6+4) machines have been provided with water injecting arrangements to wet the cuttings. Cabins are made dust proof and drilling speeds are being maintained as recommended by the manufacturers to control air borne dust.

b) <u>Water Pollution control measures</u>.

The mine water is pumped out from the mine into filter bed, where water will be filtered. The same filtered water is being supplied for colliery consumption, mine works and nearby villages (for drinking). In the filtering process, every Sunday, the old sand will be removed and new sand will be placed in the filter bed. For colliery consumption and mine consumption (drinking), the filtered water was analyzed and found fit for human consumption. Excess water discharged for cultivation purpose and for plantation in acquired land.

Sources of water pollution are mainly wastewater generated at workshops, mine discharge water and runoff water from dump yards. Quarry water is pumped out from sump and is used for dust suppression on haul roads & dump yards, suppression of fire at coal stock yards, washing of HEMM, and remaining water is discharged into nearby village gundlavagu nallah for cultivation purpose. . Excess water is let out on surface, which joins near, by Gundla Vagu. The water from Gundla vagu is being used for irrigation on the down steam side. Garland drains are being driven around the dump yard for water management.

- 1. Mine seepage water is collected in sumps in side quarry and pumped out after settling.
- 2. 3.5 KM Garland catch drains made around OB dumps and quarry.
- 3. Ground water levels are being monitored seasonally (4 times a year)
- 4. Settling ponds constructed on surface to treat the runoff water from OB dumps.

c) Noise pollution control measures:

The noise levels at sound generating points are within the permissible limits and records are also being maintained. Where ever the noise level is more than the permissible, ear plugs/muffs are being provided to the workmen, and the record is maintained for the purpose. Blasting vibrations are being controlled by controlled blasting. Two rows of plants on both sides of the approach roads, Crushers, rest shelters, substations, tub repairing shed and workshops are planted. There is a practice of leaving some coal in the bunker hoppers to control the noise and to prevent the damages to the crushers. Regular maintenance of vehicles and heavy equipment to minimize the noise level. Provision of noise proof cabins for Heavy earth moving machines. Rising of plantation in vacant lands to control noise level. Noise levels are recorded at different locations in and around the project area are found within the statutory limits.

d) Environment awareness campaign measures:

Environmental Awareness brought among the employees by wide publicity through public address system, Posters, Banners, Paintings and Pamphlets, Writing on all walls and important locations, etc., and conducting Quiz programmes. We will pledge about the Environment Awareness among all the workmen at the shift beginning. All the workmen adopted one plant each and they are pledged for serving them.

We have formed Pit Head Environment Management Committee (EMC) constituting Mine Manager, Safety Officer, Engineer, Surveyor, Welfare Officer and Environmental officer to perform the Environmental activities and to bring awareness among the workmen. Also Area level Environment Management Committee is formed, and meetings are conducted once in a month.

LAND MANAGEMENT AND LAND USE DETAILS OF KTK OC-III PROJECT :

Total land area required for the project is 1336.64Ha. The mine take area of UG section is included in the 1336.64 Ha.

SI. no	Acquired Land details	Area in Ha
	Total/ Actual land required as per EMP	1336.64
1.	Private land	737.28
2.	Government land	599.36
3.	Govt. Assigned Land	nil
4.	Outside the project area	nil
	Total Project Area	1336.64

PRESENT LAND USE STATUS OF KTK OC-III PROJECT (OC SECTION):

SI. No	Land use pattern	Area in Ha.
1.	Quarry area (including drain, bund, etc.)	678.21
2.	External dump yard (include drain, bund, etc.)	382.04
3.	Road and infrastructure area	50.12
4.	Safety/rationalization zone	190.7
5.	Water body/ nallah diversion	25.89
6.	Undisturbed/NFL (Exclusive UG)	9.68
TOTÀL LAND		1336.64

LAND USE PATTERN OF KTK OC-III PROJECT (U/G SECTION)

SI.No.		
1.	TOTAL MINE TAKE AREA	601.20Ha.
2.	Total Acquired land	139.79 Ha.
	Private land	65.79 Ha.
	Govt. land	74.00 Ha.
	Forest land	
3.	Land use details of acquired land	
	Mine pit head structure / Establishment area	29.94Ha
(a)		
	Fan house Area	2.27 Ha
(b)		
	Magazine area if any outside establishment area	
(C)		
	Proposed shaft area	
(d)		
	Sand stowing plant/sand stock area	
(e)		
(f)	Coal dump area if any, outside establishment area	
	Other surface building area	
(g)	b) Jawahar colony	
	ii) Land under dispute	
	Road & Transmission line	1.18Ha
(h)		
(i)	Nallah & Tank etc	16.14Ha

() Plantation area	15.70 Ha
	RPGF area	
(k)		
	Total	65.23 Ha
4.	LAND AVAILABLE [2-3(1)]	74.56 Ha
	SUBSIDENCE AREA DETAILS	
5.	Total subsidence area	Not applicable
	(a) Active subsidence area	Not applicable
	(b) Stabilised subsidence area	Not applicable
	Area where O.B is filled and planted	Not applicable
	Area where O.B. is filled and not yet planted	Not applicable
	and ready for plantation	
		ſ
	Area where O.B. filling is not required any	Not applicable
	ready for plantation	
6.	Vacant coal bearing area where subsidence is not	
	expected/anticipated within next 8 years (at the	
	proposed rate of extraction)	
7.	Vacant non coal bearing area	

Village wise revenue survey nos. of the mine taken area (Acquired land and non-acquired).

SUBSIDENCE MANAGEMENT: NIL (De-pillaring is not started)

PLANTATION DETAILS:

So far 123 Ha of area has been brought under plantation in the project. Clones,Sinduga,Kanuga,Neem, Naravepa, Naredu, Ravi, Buruga,Usiri, Nemali nara, Veduru, Eppa etc. are the species planted so far. Total Expenditure incurred so far for the year 2023-2024 is 2,21,480 /- . Nearly 20,000 fruit bearing trees, forest trees etc., have been distributed to local villages after the establishment of project. This year 1000 fruit bearing plants have been distributed to project affected families on World Environment day . A 3tire Plantation has been done from mine premises to Parkal of 30kms length where So far 20,000 plants have been planted.

1	No of plants planted during last	10,500
	year	
2	Area covered in Ha	4
3	Expenditure incurred in Rs. lakhs	2,21,480(2023-2024)
4	Total area brought under plantation so far in Ha	123 Ha
5	Total no of plants planted so far since inception	1,91,440
6	Species of plants planted	Clones,Sinduga,Kanuga,Neem, Naravepa, Naredu, Ravi, Buruga,Usiri, Nemali nara, Veduru, Eppa etc.
7	Seeds sown so far	4 Ha (near dump yard)
8	Small plants planted so far	20,000
9	Total expenditure in Rs.	2.53Cr

Plantation details(KTK OC-III/KLP):

Water Consumption:

PUMPED OUT WATER USED FOR DIFFERENT PURPOSES

Purpose	Quantity of water/day
Water used for drinking	110 KLD
Water used for dust suppression	1300 KLD
Water used for plantation	15 KLD
Water discharged outside Villagers & Cultivation and others for ground water recharge	3175KLD
Total water pumped out	4600KLD

PART-D

HAZARDOUS WASTES - Not applicable

P A R T – E SOLID WASTES

The solid wastes generated in the area are mainly rejects separated from coal at the coal face. Iron scrap of various types generated at mines is sent to area stores periodically. Used material such as old drill bits, drill rods, cap lamp batteries, etc. is sent to area stores, periodically from where these materials are disposed to Pannalal Heeralal Enterprises, RCA road, Dwaraka homes, Hyderabad.

In the process of coal extraction overlying earth cover is removed to expose the coal seam by blasting. The blasted material consists of top soil, sand, broken rock material ,clay and shale. This blasted material is loaded into dumpers by shovels and transported to dump yards. In the initial stages until sufficient decoaled area is available the overburden material removed is dumped in external dump yards and after some advancement of quarry the material is dumped in the decoaled area. The topsoil removed is preserved for future use and some soil is spreader on completed dump decks and slopes.

REJECTS (STONE, SHALE & CLAY):

Rejects separated from coal consists of stone pieces, carbonaceous shale and clay material. These rejects are picked out from the coal manually when coal is dumped in coal yard. The rejects picked out are put as separate heaps and are loaded into trucks and dumped over low-lying areas and in ditches on the haul roads or dumped in dump yards.

OLD IRON SCRAP AND OTHER WASTE:

The scrap iron material generated at Workshops and mines consists of steel scrap of various types like worn out friction rollers, worn out belt rollers and idler sections, old pipes, worn out parts of various machinery and vehicles used in mines, etc.,

Many of these old materials are used at unit level for some other appropriate use. For example, worn-out old conveyor belts are reused for making washers and wipers and cushioning over the chute plates at conveyor transfer points, etc, flat iron scrap is used for making washers, liners, etc.

The old iron scrap that cannot be used at unit level / workshops is sent to Area stores from where it is disposed Pannalal Heeralal Enterprises, RCA road, Dwaraka homes, Hyderabad.

<u> P A R T – F</u>

CHARACTERISATION OF SOLID WASTE AND DISPOSAL PRACTICE

Solid wastes generated are stones, carbonaceous shale and clay, etc. These waste materials are picked out from coal when passing on slow moving belts by manual operation in coal screening plants. These rejects are heaped separately and dumped in low-lying areas and ditches. Over burden material consists of soil, sand, broken hard rock and clay and some carbo-clay, shale etc. All these materials are excavated for exposing the coal seams underneath the earth cover in benches by blasting. The blasted material is lifted in to dumpers by shovels and transported to dump yards.. In initial stages these over burden materials is dumped outside the quarry and after some advancement of the quarry these materials are dumped into the decoaled area to back fill the voids created. Saplings of different plant species are being over these dumps after proper sloping and leveling.

The Iron scrap of various types generated at mine is sent to area stores. Some of the scrap is utilized in the company and remaining is disposed off by auction to Pannalal Heeralal Enterprises, RCA road, Dwaraka homes, Hyderabad.

Other waste materials like old shoes and old canister bags also collected and sent to area stores from where they are disposed off by auction through M/s Pannalal Heeralal Enterprises, RCA road, Dwaraka homes, Hyderabad.

<u> P A R T – G</u>

IMPACT OF POLLUTION CONTROL MEASURES TAKEN ON CONSERVATION OF NATURAL RESOURCES AND ON THE COST OF PRODUCTION

- About 30 % of total mine discharge water is used/recycled for drinking, washing, dust suppression and plantation after treatment at mine filter beds. The excess water let out on surface is used for irrigation by the villagers nearby directly or indirectly through irrigation tanks. Thus the entire quantity of water pumped out from the mine is utilized either directly or indirectly. An amount of Rs. 15.49 Lakh has been spent for mine water treatment during the year 2023-24
- 2. As a result of water spraying being done at the working places, coal transportation points, mine premises, coal screening plant premises, coal loading and unloading points, along the conveyor belts, dump yards, haul roads etc, the dust is getting suppressed

near the source and thereby preventing it becoming air borne and spreading into the surrounding areas. An amount of about Rs.54 lakhs has been spent in the purpose of air quality monitoring and green belt development during the year 2023-2024.

- 3. Total 123 Ha of mine take area is converted into green belt so far at KTK-OC III PROJECT. Rs.2,21,480 /- is spent on maintenance of the plantations during the year 2023-2024.
- 4. Extensive water spraying arrangements have been made at the opencast mine, 8 no's of 20 Kilo liters capacity water tankers are being used for spraying water on haul roads from the quarry to O.B. dumps and other road ways..
- 5. Nearly 20,000 fruit bearing trees, forest trees etc., have been distributed to local villages after the establishment of project. This year 1000 fruit bearing plants have been distributed to project affected families on World Environment day.
- 6. S.C.C.L is encouraging its employees to undergo family planning Operations by giving incentive of Rs. 1000/- and 800/- for Vasectomy and Tubectomy respectively in addition to 6 days special leave.
- 7. Desilting of garland drains and settling ponds.
- 8. Nonels are being used to control blast vibrations.
- 9. Maintenance of filter beds as per schedule by the civil Department.

IMPACT OF POLLUTION CONTROL MEASURES ON COST OF PRODUCTION:

Capital & Revenue Environment Expenditure for the year 2023-24 below:

	Capital (in Rs.)	Revenue (in Rs.)
KTK OC-III(UG)		2,30,73,943/-
KTK OC-III(OC)	3,94,76,919/-	10,83,00,026/-

<u> P A R T – H</u>

ADDITIONAL MEASURES/INVESTMENT PROPOSALS FOR ENVIRONMENTAL PROTECTION AND OF POLLUTION:

- 1. Reimbursing the cost of one LPG gas cylinder (at IOC rates) per month to the employees using LPG gas to discourage use of coal for domestic use. All the employees using LPG gas at present .
- 2. Development of green belt over vacant places.
- 3. Proposed to plant about 45 Ha this year plantation program in Project area.
- 4. Organizing family planning and health camps for the welfare of the workers and other public
- 5. Stabilization of OB dump slopes with seed sowing, Agave suckers, etc.,

OTHER PARTICULARS FOR IMPROVING THE QUALITY OF ENVIRONMENT:

- 1. "World Environment Day" and "World Environment Protection Day" were observed on 5th June and 30th June 2023 respectively.
- 2. Environment Awareness Week (ENVAW) was observed from 27th June 2024 in the area. During ENVAW, quiz competitions were held at mines and departments and for the local school children etc. to inculcate environmental awareness.
- 3. Health awareness camps and regular medical camps are being held in the surrounding villages also.
- 4. Environmental management is included in the curriculum of training for supervisors.
- 5. Steps are being taken to conserve water by taking suitable water conservation measures.
- 6. 10 no's of Rain water harvesting pits have been constructed in mine premises and nearby villages etc.
- 7. Awareness is being brought among workmen through posters, pamphlets slogans and by conducting quiz competitions.
- 8. Parks and gardens are being maintained in the area. Clubs and swimming pool is being maintained in the colonies.

SOCIO-ECONOMIC MEASURES:

	0
1	Quarters are constructed on non coal bearing areas with facilities such as Hospitals, Schools, Market place, Post Office, Power Supply, Community Halls, Recreation Clubs, Play Grounds and protected water supply and well netted sewage and drainage line systems. 950 employees are provided quarters out of 1258 employees on roll.
2	1258 LPG gas cylinders are being supplied free of cost to the employees.
3	Free medical treatment is being given to workmen and their families, and all children of workmen in SCCL hospitals
4	Bore wells are provided in colonies. The drinking water which is supplied to the colony is chlorinated to the prescribed standards.
5	Recreation clubs are provided with adequate facilities.
6	Free medical camps are being conducting regularly to the surrounding villagers
7	Encouragement to sports and games is given by forming works people's sports and games association for conducting inter area meets etc.
8	Giving training to the unemployed youth in different types of self employment schemes through Singareni SEWA Samithi.

PROJECT OFFICER ofect KTK OC-III Project Bhupalpalli Area/ SCCL

SI.	Date of Sampling	PM ₁₀	PM _{2.5}	SO ₂	NO ₂
No.	ine standards CCD	(µg/m°)	(µg/m°)	(µg/mš)	(µg/m°)
Coal m 742(F)	Dated 25 09 2000	250	-	120	120
1.	05.04.2023	214	76.8	9.7	13.9
2.	20.04.2023	166	48.1	10.4	15.8
3.	09.05.2023	192	71.6	11.7	15.8
4.	24.05.2023	172	57.3	10.5	14.8
5.	08.06.2023	134	69.3	10.4	15.6
6.	19.06.2023	162	54.7	12.0	14.4
7.	04.07.2023	97	40.1	8.2	13.4
8.	19.07.2023	116	41.1	10.2	13.9
9.	03.08.2023	128	42.4	8.7	11.9
10.	18.08.2023	128	44.3	9.6	12.9
11.	04.09.2023	142	69.8	10.2	14.8
12.	19.09.2023	142	66.8	10.9	14.5
13	04.10.2023	172	73.8	11.2	14.6
14	19.10.2023	184	78.2	10.1	14.2
15	04.11.2023	194	86.3	10.7	16.0
16	20.11.2023	127	44.5	10.7	13.1
17	05.12.2023	190	68.4	8.5	13.7
18	20.12.2023	125	39.2	12.2	15.8
19	04.01.2024	176	54.6	11.5	14.6
20	19.01.2024	187	56.4	9.5	14.8
21	05.02.2024	196	68.5	14.3	20.1
22	20.02.2024	182	58.2	13.8	19.4
23	02.03.2024	190	60.0	14.5	20.6
24	18.03.2024	174	64.6	16.3	22.4
	min	97	39.2	8.2	11.9
	max	196	86.3	16.3	22.4
	avg	159.55	59.55	11.17	15.51
98 per		195.16	82.90	15.54	21.64

Ambient Air Quality Results at KTK OC-III (CA5) APRIL 2023 TO MARCH 2024

S.No.	Date of Sampling	PM ₁₀ (μg/m ³)	ΡΜ _{2.5} (μg/m ³)	SO₂ (µg/m³)	NO ₂ (µg/m³)
Coal m 742(E),	ine standards, GSR Dated 25.09.2000	250	-	120	120
1.	05.04.2023	176	54.4	10.7	14.8
2.	21.04.2023	184	54.4	10.4	13.5
3.	09.05.2023	186	53.4	10.4	13.2
4.	25.05.2023	189	55.4	9.1	13.7
5.	10.06.2023	156	53.2	10.4	14.0
6.	21.06.2023	175	68.3	10.6	14.7
7.	06.07.2023	89	40.6	9.5	14.6
8.	21.07.2023	92	43.2	9.4	12.8
9.	05.08.2023	119	43.5	10.6	13.9
10.	21.08.2023	134	50.7	9.7	13.0
11.	06.09.2023	133	68.6	9.6	12.7
12.	22.09.2023	128	62.4	12.0	16.1
13	06.10.2023	161	71.6	10.2	14.2
14	20.10.2023	169	71.5	10.6	15.4
15	06.11.2023	211	89.7	10.5	17.3
16	21.11.2023	151	51.8	9.7	13.8
17	06.12.2023	202	71.5	11.0	15.3
18	21.12.2023	143	48.5	13.9	17.7
19	06.01.2024	162	46.2	9.5	14.6
20	20.01.2024	169	42.6	10.3	14.8
21	06.02.2024	148	53.2	13.0	19.6
22	21.02.2024	153	53.5	14.2	21.1
23	02.03.2024	171	51.5	13.7	19.3
24	18.03.2024	183	52.0	17.4	23.3
	min	89	40.5	9.1	12.7
	max	211	89.7	17.4	23.3
	avg	155.84	56.50	11.15	15.69
98 per		207.22	02.10	00.01	22.30

Ambient Air Quality Results at KTK OC-III BWS (CA9) APRIL 2023 TO MARCH 2024

S.No.	Date of Sampling	ΡM ₁₀ (μg/m ³)	PM _{2.5} (μg/m ³)	SO₂ (µg/m³)	NO ₂ (µg/m ³)
Coal m 742(E),	ine standards, GSR Dated 25.09.2000	250	-	120	120
1.	06.04.2023	185	62.4	9.8	15.9
2.	21.04.2023	202	52.8	9.0	14.2
3.	10.05.2023	209	71.5	11.6	14.2
4.	25.05.2023	206	62.8	9.6	15.1
5.	10.06.2023	185	64.4	11.0	14.4
6.	21.06.2023	174	72.6	11.3	14.1
7.	06.07.2023	109	42.8	8.5	13.2
8.	21.07.2023	129	46.8	9.7	13.6
9.	05.08.2023	102	40.7	8.8	12.1
10.	21.08.2023	142	52.9	9.3	12.5
11.	06.09.2023	128	59.8	10.6	13.5
12.	22.09.2023	147	71.6	10.2	13.9
13	06.10.2023	172	75.6	11.4	15.2
14	20.10.2023	187	88.6	10.5	14.8
15	06.11.2023	185	77.4	12.0	15.7
16	21.11.2023	164	64.7	10.6	13.5
17	06.12.2023	166	72.2	10.0	13.7
18	21.12.2023	157	47.4	13.1	18.6
19	06.01.2024	166	48.4	9.7	14.7
20	21.01.2024	205	57.3	11.6	13.3
21	07.02.2024	181	61.8	9.5	12.5
22	21.02.2024	195	72.1	10.4	14.5
23	02.03.2024	212	74.3	14.2	20.1
24	18.03.2024	204	56.2	15.5	21.4
	min		40.7	8.5	12.1
	max	212	88.6	15.5	21.4
	avg	169.32	62.81	10.87	14.75
98 per		210.74	83.90	14.95	20.83

Ambient Air Quality Results at KTK OC-III Pit Head CHP APRIL 2023 TO MARCH 2024

	APRIL	2023 TO MA	RCH 2024		
S.No.	Date of Sampling	PM ₁₀ (μg/m ³)	ΡΜ _{2.5} (μg/m³)	SO₂ (µg/m³)	NO₂ (µg/m³)
Coal m 742(E),	ine standards, GSR Dated 25.09.2000	250	-	120	120
1.	05.04.2023	162	58.7	10.1	12.5
2.	20.04.2023	164	54.9	9.1	14.6
3.	09.05.2023	159	55.2	10.4	14.3
4.	24.05.2023	185	60.5	11.1	13.9
5.	09.06.2023	174	47.3	10.6	13.7
6.	20.06.2023	162	65.4	10.3	15.0
7.	05.07.2023	82	39.7	8.8	12.2
8.	20.07.2023	86	39.9	10.6	13.2
9.	04.08.2023	88	33.2	9.3	13.9
10.	20.08.2023	104	47.5	9.6	12.8
11.	05.09.2023	109	54.2	9.6	13.9
12.	21.09.2023	122	59.8	11.4	14.6
13	06.10.2023	172	75.6	11.4	15.2
14	20.10.2023	187	88.6	10.5	14.8
15	06.11.2023	185	77.4	12.0	15.7
16	21.11.2023	164	64.7	10.6	13.5
17	06.12.2023	166	72.2	10.0	13.7
18	21.12.2023	157	47.4	13.1	18.6
19	06.01.2024	166	48.4	9.7	14.7
20	21.01.2024	205	57.3	11.6	13.3
21	07.02.2024	181	61.8	9.5	12.5
22	21.02.2024	195	72.1	10.4	14.5
23	02.03.2024	212	74.3	14.2	20.1
24	18.03.2024	204	56.2	15.5	21.4
	min	82	33.2	8.8	12.2
	max	212	88.6	15.5	21.4
	avg	157.50	59.03	10.92	14.80
98 per		209.06	83.90	14.95	20.85

 Table 3.2

 Ambient Air Quality Results at KLP UG Mine (CA11)

S.No.	Date of Sampling	PM ₁₀ (μg/m ³)	ΡM _{2.5} (μg/m ³)	SO₂ (µg/m³)	NO₂ (µg/m³)
NAAQ Dated:	NAAQ Standards, CPCB Dated: 18.11.2009		60	80	80
1.	05.04.2023	77	39.8	8.0	11.2
2.	20.04.2023	77	39.6	8.6	12.2
3.	09.05.2023	71	36.5	9.3	14.3
4.	24.05.2023	68	36.1	8.5	15.1
5.	09.06.2023	76	42.3	9.3	13.2
6.	20.06.2023	63	32.9	9.6	13.5
7.	05.07.2023	42	23.9	9.1	12.6
8.	20.07.2023	58	29.4	9.8	12.0
9.	04.08.2023	55	28.7	9.2	11.6
10.	19.08.2023	62	31.5	8.6	12.3
11.	05.09.2023	51	27.9	8.6	12.6
12.	20.09.2023	59	29.8	8.3	12.4
13	05.04.2023	77	39.8	8.0	11.2
14	20.04.2023	77	39.6	8.6	12.2
15	09.05.2023	71	36.5	9.3	14.3
16	24.05.2023	68	36.1	8.5	15.1
17	09.06.2023	76	42.3	9.3	13.2
18	20.06.2023	63	32.9	9.6	13.5
19	05.07.2023	42	23.9	9.1	12.6
20	20.07.2023	58	29.4	9.8	12.0
21	04.08.2023	55	28.7	9.2	11.6
22	19.08.2023	62	31.5	8.6	12.3
23	05.09.2023	51	27.9	8.6	12.6
24	20.09.2023	59	29.8	8.3	12.4
	min	42	23.9	8	11.2
	max	77	42.3	9.8	15.1
	avg 98 per	02.00 77.00	32.01 42.30	0.90 0.80	12.85
98 per		11.00	42.30	3.00	13.10

Ambient Air Quality Results at Basavarajupalli Village (BA10) APRIL 2023 TO MARCH 2024

S.No.	Date of Sampling	ΡΜ ₁₀ (μg/m ³)	ΡΜ _{2.5} (μg/m ³)	SO₂ (µg/m³)	NO₂ (µg/m³)
NAAQ Dated:	NAAQ Standards, CPCB Dated: 18.11.2009		60	80	80
1.	05.04.2023	59	31.3	9.3	14.4
2.	20.04.2023	74	38.8	8.3	15.1
3.	09.05.2023	73	39.2	9.5	12.4
4.	24.05.2023	84	43.5	10.1	14.2
5.	09.06.2023	67	36.2	9.2	12.7
6.	20.06.2023	72	36.8	10.8	14.2
7.	05.07.2023	46	25.3	8.8	12.5
8.	20.07.2023	42	21.6	9.0	12.8
9.	04.08.2023	48	26.1	10.1	13.6
10.	19.08.2023	58	29.4	8.5	13.2
11.	05.09.2023	49	26.4	8.8	11.0
12.	20.09.2023	52	30.1	9.3	12.3
13	05.10.2023	62	34.5	8.0	12.9
14	19.10.2023	79	41.6	9.8	12.5
15	04.11.2023	72	38.1	8.0	12.9
16	20.11.2023	77	40.9	9.6	13.5
17	05.12.2023	73	36.1	8.1	10.9
18	20.12.2023	60	35.9	9.6	12.7
19	05.01.2024	59	33.1	9.1	12.1
20	19.01.2024	77	48.6	9.3	13.5
21	05.02.2024	71	34.3	8.8	14.4
22	20.02.2024	64	28.8	9.4	13.8
23	07.03.2024	82	38.7	10.5	15.2
24	22.03.2024	94	48.6	12.2	18.5
	min		21.6	8	10.9
	max	94	48.6	12.2	18.5
	avg	66.41	35.17	9.39	13.26
98 per		89.80	48.60	11.61	17.11

Ambient Air Quality Results at Peddapur Village (BA18) APRIL 2023 TO MARCH 2024

S.No.	Date of Sampling	PM ₁₀ (μg/m³)	ΡΜ _{2.5} (μg/m ³)	SO₂ (µg/m³)	NO₂ (µg/m³)
NAAQ Dated:	Standards, CPCB 18.11.2009	100	60	80	80
1.	05.04.2023	79	39.7	9.1	13.2
2.	20.04.2023	69	40.4	9.2	15.4
3.	09.05.2023	86	43.2	8.7	12.8
4.	24.05.2023	89	47.5	8.6	14.7
5.	09.06.2023	65	35.6	8.5	12.9
6.	20.06.2023	64	33.2	9.9	15.2
7.	05.07.2023	47	27.3	9.5	12.6
8.	20.07.2023	46	23.3	9.9	13.9
9.	04.08.2023	51	26.5	9.1	12.8
10.	19.08.2023	55	28.5	9.0	13.3
11.	05.09.2023	54	29.8	8.0	13.8
12.	20.09.2023	58	33.6	9.0	13.9
13	05.10.2023	67	33.8	8.1	12.0
14	19.10.2023	68	36.7	8.7	13.6
15	06.11.2023	69	37.6	8.8	12.7
16	20.11.2023	71	36.4	8.8	13.7
17	06.12.2023	61	39.6	9.8	14.3
18	20.12.2023	74	29.9	7.6	14.0
19	05.01.2024	58	29.9	9.5	12.1
20	19.01.2024	70	37.3	9.2	15.6
21	05.02.2024	64	28.5	7.3	11.8
22	20.02.2024	53	21.7	8.1	12.0
23	07.03.2024	66	31.3	9.2	13.7
24	22.03.2024	85	39.5	10.6	14.3
	min	46	21.7	7.3	11.8
	max	89	47.5	10.5	15.6
	avg	64.59	33.21	8.90	13.44
98 per		ð/./4	43.09	10.31	15.43

Ambient Air Quality Results at Dharmaraopet Village (BA11) APRIL 2023 TO MARCH 2024

S.No.	Date of Sampling	PM ₁₀ (μg/m ³)	ΡΜ _{2.5} (μg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m³)
NAAQ Dated:	Standards, CPCB 18.11.2009	100	60	80	80
1.	06.04.2023	72	37.2	10.1	15.3
2.	21.04.2023	69	39.7	10.1	14.2
3.	10.05.2023	73	39.4	10.2	13.4
4.	25.05.2023	68	36.2	9.3	12.5
5.	10.06.2023	86	44.8	9.1	13.6
6.	21.06.2023	75	39.1	10.7	14.0
7.	06.07.2023	43	30.4	9.2	12.9
8.	21.07.2023	54	28.9	9.2	13.8
9.	05.08.2023	56	28.9	8.0	13.1
10.	21.08.2023	59	30.2	8.2	12.9
11.	06.09.2023	59	30.1	8.5	12.8
12.	22.09.2023	68	36.4	8.2	12.7
13	06.10.2023	62	33.4	8.3	12.1
14	20.10.2023	81	44.5	10.0	14.1
15	06.11.2023	52	29.6	9.6	13.5
16	21.11.2023	69	39.5	8.7	12.5
17	06.12.2023	56	33.6	7.8	10.9
18	21.12.2023	60	36.4	8.2	13.9
19	06.01.2024	69	36.5	10.4	13.0
20	20.01.2024	69	41.4	9.1	15.8
21	06.02.2024	72	32.7	7.6	12.7
22	20.02.2024	75	30.5	7.5	11.6
23	07.03.2024	71	37.6	8.7	12.3
24	22.03.2024	67	28.1	9.1	13.6
	min		28.1	7.5	10.9
	max	86	44.8	10.7	15.8
	avg	65.64	34.92	8.89	13.08
98 per		83.90	44.07	10.57	15.09

Ambient Air Quality Results at Gurrampet Village (BA11) APRIL 2023 TO MARCH 2024

	Sampling	g Period: AP	RIL 2023 1	TO MARCH	12024		
S.No.	Date of Sampling	рН	TSS at 105⁰C	TDS at 180⁰C	COD	BOD	Oil & Grease
	Unit		mg/L	mg/L	mg/L	mg/l	mg/L
	Test Method	4500-H⁺B	2540-D	2540-C	5220-D	IS 3025	5520-B
Mo	DEF GSR 742 (E) and						
	GSR 801(E) Effluent	5.5 to 9.0	100		250	30	10
Star	ndards for coal mines						
1	10.04.2023	7.9	29	1092	28	3	1
2	23.04.2023	7.5	36	785	31	3.1	<1
3	10.05.2023	7.9	18	748	28	3	1.2
4	31.05.2023	7.3	24	681	24	2.5	1
5	15.06.2023	8	20	845	27	2.6	1
6	25.06.2023	7.8	16	793	23	2.1	1
7	10.07.2023	7.6	18	790	19	2	<1
8	24.07.2023	7.7	39	985	23	3.6	<1
9	11.08.2023	7.7	36	1012	27	4.6	<1
10	23.08.2023	7.9	29	711	32	5.2	1.2
11	12.09.2023	7.4	42	809	39	4.2	2
12	22.09.2023	7.9	56	993	43	5.1	1.6
13	07.10.2023	7.7	35	844	40	8.6	1.8
14	25.10.2023	7.4	26	790	23	3.1	1.4
15	08.11.2023	7.5	38	880	31	4.1	1
16	24.11.2023	7.2	22	910	36	5.8	1.4
17	08.12.2023	7.9	33	892	27	3.8	1
18	22.12.2023	7.6	27	944	19	2.15	<1
19	08.01.2024	7.7	34	841	31	5.4	1.2
20	23.01.2024	8.0	23	1047	36	6.6	1
21	09.02.2024	7.8	30	964	32	3.5	<1
22	24.02.2024	7.4	29	1088	37	5.1	1
23	09.03.2024	7.6	36	895	27	4.5	<1
24	23.03.2024	7.8	23	935	32	3.4	<1
	min	7.2	16	681	19	2	1
	max	8	56	1088	43	8.6	1
	avg	7.67	29.73	981.68	29.82	4.13	1
	98 per	8.00	50.12	1070.78	41.74	7.76	1

Effluents Quality Data Characteristics of Effluents – KTK OC-III Mine discharge (EW8)

Effluents Quality Data Characteristics of Effluents – KTK OC-III 2nd Mine Discharge Settling Tank Outlet

			TSS	TDS			01.0
S.No.	Date of Sampling	рН	at	at	COD	BOD	
		-	105⁰C	180⁰C			Grease
	Unit		mg/L	mg/L	mg/L	mg/l	mg/L
	Test Method	4500-H⁺B	2540-D	2540-C	5220-D	IS 3025	5520-B
Mo	DEF GSR 742 (E) and GSR 801(E) Effluent	5.5 to 9.0	100		250	30	10
Star	ndards for coal mines			4074			
1	10.04.2023	7.7	71	1274	56	14.1	3.2
2	23.04.2023	7.6	67	986	59	13.3	3.6
3	10.05.2023	7.8	79	1094	64	15.1	3
4	31.05.2023	7.5	59	1153	56	16.1	3.2
5	15.06.2023	7.9	57	731	59	16.2	3.4
6	25.06.2023	7.3	68	1274	63	14.3	3.2
7	10.07.2023	7.7	51	932	55	11.1	2.6
8	24.07.2023	8.0	66	1147	63	14.2	3.2
9	11.08.2023	7.8	78	1419	79	22.4	3.6
10	23.08.2023	7.7	59	1094	68	17.2	4
11	12.09.2023	6.9	86	1103	60	15.4	5
12	22.09.2023	7.8	71	1240	72	18.1	4.2
13	07.10.2023	8.1	68	995	64	13.4	4.6
14	25.10.2023	7.7	54	891	48	9.6	3.4
15	08.11.2023	7.7	79	1173	67	12.8	4.2
16	24.11.2023	7.9	65	1084	76	13.2	3.8
17	08.12.2023	7.6	81	1147	59	14.1	4.4
18	22.12.2023	7.8	60	996	63	14.3	5.2
19	08.01.2024	8.1	74	1274	75	16.8	6.1
20	23.01.2024	7.9	68	1488	56	13.4	5.4
21	09.02.2024	7.2	77	1347	64	15.1	2
22	24.02.2024	7.8	84	1513	83	22.6	1.8
23	09.03.2024	7.4	64	1675	75	15.1	2
24	23.03.2024	7.7	57	1433	59	13.3	2.2
	min	6.9	51	731	48	9.6	1.8
	max	8.1	86	1675	83	22.6	1.8
	avg	7.70	68.41	1191.05	64.91	15.17	1.8
	98 per	8.10	85.16	1606.96	81.32	22.52	1.8

Sampling Period: APRIL 2023 TO MARCH 2024

Name of the Location	Date of	Noise levels in dB (A)				
	Sampling	Leq Day	Leq Night			
	06.04.2023	46.1	36.0			
	21.04.2023	57.8	44.5			
	10.05.2023	52.1	43.7			
	25.05.2023	42.1	39.2			
	10.06.2023	57.8	40.9			
	21.06.2023	56.7	49.5			
	06.07.2023	57.5	44.9			
	21.07.2023	51.6	43.2			
	05.07.2023	55.8	46.3			
	20.07.2023	56.8	40.7			
	06.09.2023	46.3	35.2			
	21.09.2023	55.4	46.2			
	06.10.2023	49.7	33.2			
	20.10.2023	67.9	55.5			
	06.11.2023	53.6	46.3			
	21.11.2023	57.0	42.0			
	06.12.2023	51.8	44.5			
	21.12.2023	58.5	44.0			
	06.01.2024	57.5	54.8			
	20.01.2024	48.2	44.9			
	06.02.2024	48.2	44.9			
	19.02.2024	57.4	47.8			
	04.03.2024	56.5	44.2			
	19.03.2024	55.4	45.3			
	min	42.1	33.2			
	max	67.9	55.5			
	avg	54.26	44.42			
	98 per	63.95	55.21			
GSR 74	42 (E) Standards	75	70			

Noise Quality Data- KTK OC-III (CN7) Monitoring Period: From APRIL 2023 TO MARCH 2024

Noise Quality Data- KTK OC-III BWS (CN4)

Name of the Location	Date of	Noise levels in dB (A)				
	Sampling	Leq Day	Leq Night			
	05.04.2023	46.5	31.9			
	20.04.2023	51.7	47.4			
	09.05.2023	57.6	43.8			
	24.05.2023	48.7	37.3			
	09.06.2023	55.5	42.3			
	20.06.2023	54.3	43.7			
	05.07.2023	55.8	46.3			
	20.07.2023	56.8	40.7			
	04.08.2023	67.6	51.9			
	19.08.2023	57.6	46.1			
	05.09.2023	54.3	42.7			
	20.09.2023	62.6	47.0			
	05.10.2023	56.2	45.8			
	06.10.2023	49.7	33.2			
	04.11.2023	56.7	40.8			
	20.11.2023	49.4	38.5			
	06.12.2023	42.5	34.5			
	21.12.2023	55.5	46.5			
	05.01.2024	60.7	50.0			
	19.01.2024	51.4	46.3			
	05.02.2024	51.4	46.3			
	19.02.2024	61.3	52.1			
	04.03.2024	58.7	47.5			
	19.03.2024	61.3	42.9			
	min	42.5	33.2			
	max	67.6	52.1			
	avg	55.71	43.92			
	98 per	65.50	52.02			
GSR 74	12 (E) Standards	75	70			

Monitoring Period: From APRIL 2023 TO MARCH 2024

Noise levels in dB (A) Date of Name of the Location Sampling Leq Night Leq Day 06.04.2023 46.5 33.9 21.04.2023 43.3 31.2 10.05.2023 48.7 31.4 25.05.2023 29.5 39.6 10.06.2023 39.3 28.4

Noise Quality Data- Peddapur Village (BN 7) Monitoring Period: From APRIL 2023 TO MARCH 2024

	21.06.2023	41.3	31.4
	06.07.2023	41.9	37.2
	21.07.2023	42.1	38.5
	05.08.2023	38.0	26.5
	21.08.2023	44.8	33.8
	06.09.2023	42.1	29.1
	21.09.2023	43.8	30.8
	06.10.2023	43.5	34.5
Peddapur Village (BN 7)	20.10.2023	43.6	32.8
	06.11.2023	41.6	33.0
	21.11.2023	38.1	26.1
	06.12.2023	50.2	39.0
	21.12.2023	40.5	29.9
	06.01.2024	38.2	29.9
	20.01.2024	41.5	33.3
	06.02.2024	41.5	33.3
	22.02.2024	45.8	35.4
	04.03.2024	44.4	32.7
	21.03.2024	45.2	35.3
	min	38	26.1
	max	50.2	39
	avg	42.53	32.35
	98 per	49.57	38.79
GSR 74	42 (E) Standards	55	45

Noise Quality Data- Basavarajupalli Village(BN 8)

Name of the Location	Date of	Noise leve	els in dB (A)
	Sampling	Leq Day	Leq Night
	06.04.2023	37.4	30.4
	21.04.2023	36.8	27.4
	10.05.2023	44.1	33.3
	25.05.2023	39.4	30.2
	10.06.2023	40.6	32.7
	21.06.2023	36.9	28.5
	06.07.2023	37.5	35.4
	21.07.2023	47.2	32.8
	05.08.2023	42.6	39.3
	21.08.2023	43.0	36.2
	06.09.2023	47.1	33.8
	21.09.2023	46.0	32.2
	06.10.2023	45.9	39.9
Basavarajupalli	20.10.2023	35.6	27.8
Village(DN o)	06.11.2023	48.4	33.7
	21.11.2023	47.1	36.5
	06.12.2023	53.2	42.9
	21.12.2023	45.7	35.1
	06.01.2024	48.1	36.3
	20.01.2024	44.7	31.4
	06.02.2024	44.7	31.4
	22.02.2024	46.5	37.1
	04.03.2024	45.7	34.5
	21.03.2024	47.1	36.9
	min	35.6	27.8
	max	53.2	42.9
	avg	44.41	34.45
	98 per	51.18	41.64
GSR 74	42 (E) Standards	55	45

Monitoring Period: From APRIL 2023 TO MARCH 2024

4.0 WATER QUALITY

4.1 Selection of Sampling Locations

A total of 5 water samples i.e., 3 samples from surface and 2 samples from groundwater were collected and analyzed for various physico-chemical and bacteriological parameters.

		Sampling		Date of s	ampling		Sampling			
N	lo.	code	1 st	2 nd	3rd	4th	Location	Latitude	Longitude	
			Quarter	Quarter	Quarter	Quarter				
1		SW-3	08.11.2022	03.02.2023	23.04.2023	16.08.2023	Tank near Dharmaraopeta Village	N 18°20'27.96"	E 79°53'13.89	
	2.	SW-4	08.11.2022	03.02.2023	23.04.2023	16.08.2023	Tank near Peddapur Village	N 18°22'10.93"	E 79°54'44.31	1
	3.	SW-5	08.11.2022	03.02.2023	23.04.2023	16.08.2023	Gundla Vagu U/S	N 18°22'13.45"	E 79°53'57.54	

Table 4.1 Surface Water Sampling Locations

Table 4.2 Groundwater Sampling Locations

¢	SI. Sampling			Date of s	sampling		Sampling		
N	0.	code	1 st Quarter	2 ^{nª} Quarter	3rd Quarter	3rd 4th Locatio Quarter Quarter		Latitude	Longitude
1		GW-3	08.11.2022	03.02.2023	23.04.2023	16.08.2023	Basavarajupalli Village	N 18°21' 53.22"	E 79° 52' 53.47"
	2.	GW-4	08.11.2022	03.02.2023	23.04.2023	16.08.2023	Peddapur Village	N 18°22'29.97"	E 79°54'23.40'

Table 4.3 Physical-Chemical and Bacteriological Characteristics of Surface Water

Table 4.3.1 Physical-Chemical and Bacteriological Characteristics of Surface Water as per CPCB Water Quality Criteria

					CPCB V	Vater Qua	ality Criteri	а						RES	ULT						
S. No.	Parameters	Unit	Test Method	Class	Class	Class	Class	Class	Tank	SW near Dh Vill	/-3 armarad age	opeta	Tank	SV near Peo	/-4 ddapur \	/illage	SW-5 Gundla Vagu U/S			;	
				A	В	C	D	E	1 st Qtr	2 nd Qtr	3rd Qtr	4th Qtr	1 st Qtr	2 nd Qtr	3rd Qtr	4th Qtr	1 st Qtr	2 nd Qtr	3rd Qtr	4† Q	th !tr
1	рН	-	4500- H⁺B	6.5 -8.5	6.5 - 8.5	6.0 - 9.0	6.5 -8.5	6.0-8.5	8.0	7.5	6.5	7.8	7.9	7.9	7.5	7.4	7.7	7.5	7.1	1	.5
2	Electrical Conductivity	µmhos/cm	2510-B	-	-	-	-	2250 µmhos/ cm	308	370	582	420	220	361	288	298	740	963	1012	X	35
3	Dissolved Oxygen (DO)	mg/L	4500-O.C	6 mg/l or more	5 mg/l or more	4 mg/l or more	4 mg/l or more	-	6.3	6.0	6.6	5.8	6.5	6.1	6.3	6.0	6.0	5.7	5.8	5.	.6
4	Bio chemical Oxygen Demand (3 days 27° C)	mg/L	IS: 3025	2 mg/l or less	3 mg/l or less	3 mg/l or less	-	-	2.8	2.1	2.8	2.8	2.6	1.3	2.6	2.4	3.0	3.4	3.6	3.	.2
5	Total Coliforms	MPN/100mL	9221 B	50 or less	500 or less	5000 or less	-	-	280	130	220	110	170	110	170	94	220	350	350	24	40
6	Free Ammonia (as N)	mg/L	4500- NH ₃ –F	-	-	-	1.2 mg/L or less	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	EC	DL
7	Boron as B	mg/L	3120-B	-	-	-	-	Less than 2 mg/L	0.25	0.21	0.08	0.11	0.09	0.11	0.21	0.09	0.27	0.16	0.14	0.	16
8	SAR	-	-	-	-	-	-	Less than 26	0.72	1.11	3.71	0.74	0.56	0.73	0.68	1.06	1.17	2.75	1.27	1.!	54

				SW-3					SM	/-4		SW-5				
S.	Daramotors	Unit	Test	Tank n	ear Dharr	naraopeta	Village	Tar	nk near Peo	dapur Vill	age		Gundla	/agu U/S		
No	Falameters	Unit	Method	1 st	2 nd	3rd	4th	1 st	2 nd	3rd	4th	1 st	2 nd	3rd	4th	
				quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	
1	Colour	Hazen	2120. B	10	5	5	5	5	5	5	5	10	10	5	5	
				No	No	No	No	No	No	No	No	No	No	No	No	
2	Odour	TON	2150 B	odour	odour	odour	odour	odour	odour	odour	odour	odour	odour	odour	odour	
2	Ououi	TON	2130. D	observ	obser	observe	observ	observ	observe	observ	observ	observ	observ	observ	observ	
				ed	ved	d	ed	ed	d	ed	ed	ed	ed	ed	ed	
3	Temperature	°C	2550. B	25.3	25.5	25.0	25.0	25.2	25.2	25.0	25.0	25.3	25.3	25.1	25.0	
4	Turbidity	NTU	2130. B	1.2	1.5	0.8	7.2	1.7	1.9	2.6	8.6	3.2	2.1	39.1	11.9	
	Total Dissolved															
5	Solids at	mg/L	2540.C	181	215	345	246	130	210	172	175	436	560	590	430	
	180° C															
6	Total Suspended	ma/l	2540 D	19	20	14	24	17	17	9	35	32	28	35	32	
Ū	Solids at 105°C	ilig/ L	2340. D	17	20	14	27	17		,	55	52	20		52	
7	Chemical Oxygen	ma/l	5220 D	20	12	16	20	20	8	16	12	28	20	20	24	
'	Demand	iiig/ L	5220. D	20	12	10	20	20	0	10	12	20	20	20	27	
8	Chlorides as Cl ⁻	mg/L	4500-Cl ⁻ .B	28	41	78	25	21	19	38	30	85	183	180	115	
9	Sulphates as SO ₄ ²⁻	mg/L	4500-SO4 ²⁻ .E	12	27	29	14	1.5	18	16	6.2	52	59	69	47	
10	Fluoride as F	mg/L	4500-F ⁻ .C	0.33	0.14	0.21	0.49	0.27	0.11	0.32	0.31	0.38	0.68	0.64	0.61	
11	Calcium as Ca	mg/L	3500-Ca.B	28	22	21	26	22	14	14	16	54	58	58	52	
12	Magnesium as Mg	mg/L	3500-Mg.B	12	16	15	18	8	11	11	10	38	41	48	38	
13	Sodium as Na	mg/L	3500-Na.B	18	28	91	20	12	15	14	22	46	112	54	60	
14	Potassium as K	mg/L	3500-K.B	2.5	0.76	3.1	2.5	1.8	0.7	1.1	0.8	4.1	5.2	2.6	2	
15	Nitrites as NO ₂	mg/L	4500-NO2 ⁻ .B	2.2	BDL	BDL	0.17	0.1	BDL	BDL	BDL	1.6	1.28	12.7	BDL	
16	Nitrates as NO ₃	mg/L	4500-NO3 ⁻ .B	9.3	11.1	9.6	32	3.9	2.3	6.9	1.97	5.8	7.9	4	4.8	
17	Total Phosphates	mg/L	4500-P-D	BDL	BDL	0.065	0.064	BDL	BDL	BDL	BDL	BDL	BDL	0.006	0.13	

Table 4.3.2 Physico-Chemical Characteristics of Surface Water at Selected Locations in the Study Area

					SI	N-3			SV	/-4			SV	V-5	
S.	Daramotors	Unit	Test	Tank n	iear Dharr	naraopeta	Village	Tar	nk near Peo	dapur Vill	age		Gundla	Vagu U/S	
No	Falameters	Unit	Method	1 st	2 nd	3rd	4th	1 st	2 nd	3rd	4th	1 st	2 nd	3rd	4th
				quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter
	Ammonical														
18	Nitrogen as	mg/L	4500-NH ₃ -C	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Phenolic														
19	compounds as	ma/L	5530-D	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	C ₆ H ₅ OH														
20	Oil & Grease	mg/L	5520. B	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
21	Carbonates as	ma/l	2320 B	nil	nil	Nil	Nil	nil	nil	Nil	Nil	nil	nil	Nil	Nil
21	CO ₃	mg/ E	2020.0												
22	Bi-carbonates as HCO ₃	mg/L	2320. B	114	103	140	165	9 5	200	95	130	225	137	265	165
23	Fecal Coliforms	MPN/ 100mL	9221 E	23	11	14	6.8	11	14	4	6.8	24	33	33	23
24	Zinc as Zn	mg/L	3120. B	0.08	0.15	0.11	0.21	0.14	0.20	0.15	0.13	0.16	BDL	0.17	0.08
25	Iron as Fe	mg/L	3120. B	0.53	0.67	0.38	0.29	0.35	0.53	0.65	0.38	0.75	0.66	0.75	0.41
26	Arsenic as As	mg/L	3120. B	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Lead as Pb	mg/L	3120. B	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Cadmium as Cd	mg/L	3120. B	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29	Total Chromium as Cr	mg/L	3120. B	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30	Nickel as Ni	mg/L	3120. B	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31	Copper as Cu	mg/L	3120-B	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
32	Selenium as Se	mg/L	3120-B	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

				IS: 10500	IS: 10500	RESULT									
SI. No.	Parameters	Unit	Test Method	Requirement (Acceptable Limit)	Permissible Limit in the absence of alternate source		GW Basavarajup	I-3 balli Village	9		GV Peddapu	V-4 ur Village			
	1		1			1 st Qtr	2 ^{na} Qtr	3rd Qtr	4th Qtr	1 st Qtr	2 ^{na} Qtr	3rd Qtr	4th Qtr		
1.	Colour	Hazen	2120. B	5	15	<5	<5	<5	<5	<5	<5	<5	<5		
2.	Odour	TON	2150. B	Agreeable	Agreeable	Agree.	Agree.	Agree.	Agree.	Agree.	Agree.	Agree.	Agree.		
3.	рН	-	4500-H ⁺ B	6.5 to 8.5	No relaxation	7.1	7.0	6.9	7.0	8.2	6.9	7.0	6.7		
4.	Taste	FTN	2160. B	Agreeable	Agreeable	Agree.	Agree.	Agree.	Agree.	Agree.	Agree.	Agree.	Agree.		
5.	Turbidity	NTU	2130. B	1	5	0.32	0.72	0.26	0.60	0.48	0.5	0.23	0.72		
6.	Total Dissolved Solids at 180°C	mg/L	2540.C	500	2000	923	1058	890	830	513	725	525	494		

Table 4.4 Physico-Chemical, Bacteriological Characteristics of Groundwater Collected within the Study Area Table 4.4.1 Organoleptic and Physical Parameters

 Table 4.4.2 General Parameters Concerning Substances Undesirable in Excessive Amounts

			IS: 10500 Permiss	IS: 10500	RESULT									
SI. No	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	Limit in absence of alternate source	I	GN Basavarajup	/-3 balli Village			GW Peddapur	-4 Village		
		•	1		•	1 st	2 nd	3rd	4th	1 st	2 nd	3rd	41	h
						Qtr	Qtr	Qtr	Qtr	Qtr	Qtr	Qtr	Q	tr
	Calcium as Ca	mg/L	3500-Ca.B	75	200	96	92	70	64	64	82	57	5	2

				10 40500	IS: 10500				RES	JLT			
SI. No	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	Limit in absence of alternate source		GV Basavarajuj	V-3 palli Village			GW Peddapur	-4 Village	
						1 st Qtr	2 nd Qtr	3rd Qtr	4th Qtr	1 st Qtr	2 nd Qtr	3rd Qtr	4th Qtr
2.	Magnesium as Mg	mg/L	3500-Mg.B	30	100	68	60	46	40	47	59	39	4D
3.	Chlorides as Cl-	mg/L	4500-CIB	250	1000	256	263	270	261	115	97	78	72
4.	Sulphates as SO42-	mg/L	4500-SO42E	200	400	67	84	71	68	39	70	72	44
5.	Fluoride as F-	mg/L	4500-FC	1.0	1.5	0.82	1.1	0.52	0.61	0.5	0.7	1.2	0.48
6.	Nitrates as NO3	mg/L	4500-NO3B	45	No relaxation	29	45	57	40	32	44	50	23
7.	Total Alkalinity as CaCO3	mg/L	2320. B	200	600	396	545	375	345	246	514	250	277
8.	Total Hardness as CaCO3	mg/L	2340. C	200	600	520	510	364	325	353	446	301	295
9.	Sulphide as H ₂ S	mg/L	4500-S2-F&D	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.	Total Ammonia-N	mg/L	IS 3025 (Part 34)	0.5	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.	Phenolic compounds as C6H5OH	mg/L	5530-D	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.	Residual free chlorine	mg/L	4500-CIB	0.2	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.	Mineral oil	mg/L	IS:3025 (part 39)	0.5	No relaxation	absent	absent	absent	absent	absent	absent	absent	absent
14.	Anionic Detergents (as MBAS)	mg/L	IS:13428:2005K	0.2	1.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
15.	Aluminium as Al	mg/L	3120-B	0.03	0.2	0.1	BDL	0.09	0.06	0.05	0.06	BDL	BDL
16.	Barium as Ba	mg/L	3120. B	0.7	No relaxation	0.19	0.19	0.13	0.08	0.22	0.31	0.26	0.13
17.	Boron as B	mg/L	3120-В	0.5	2.4	0.09	0.09	0.08	0.05	0.14	0.22	0.14	0.06
18.	Iron as Fe	mg/L	3120-В	1.0	No relaxation	0.33	0.47	0.45	0.45	0.56	0.56	0.71	0.48
19.	Zinc as Zn	mg/L	3120-В	5	15	0.23	0.14	0.15	0.07	0.18	0.19	0.19	0.14
20.	Copper as Cu	mg/L	3120-B	0.05	1.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

					IS: 10500				RESI	ULT			
SI. No	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	GW-3 Basavarajupalli Village				GW Peddapur	- 4 Village		
			·			1 st	2 nd	3rd	4th	1 st	2 nd	3rd	4th
	r					Qtr	Qtr	Qtr	Qtr	Qtr	Qtr	Qtr	Qtr
21.	Manganese as Mn	mg/L	3120-B	0.1	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.	Selenium as Se	mg/L	3120-B	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.	Silver as Ag	mg/L	3120. B	0.1	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

				10 10500	IS: 10500				RESL	JLT			
SI. No.	Parameters	Unit	Unit Test Requirement Method (Acceptable Limit)		Permissible Limit in absence of alternate source	GW-3 Basavarajupalli Village				GW-4 Peddapur Village			
						1 st	2 nd	3rd	4th	1 st	2 nd	3rd	2
	Cadmium as Cd	ma/l	3120-B	0.003	No relayation	Qtr BDI	Qtr BDI	Qtr BDI	Qtr BDI	Qtr BDI	Qtr BDI	Qtr BDI	- (F
•	Cvanide as CN-	mg/L	4500-CN ⁻ F	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
	Lead as Pb	mg/L	3120-B	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	E
	Molybdenum as Mo	ma/L	3120. B	0.07	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	E
	Nickel as Ni	ma/L	3120-B	0.02	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	E
	Total Arsenic as As	mg/L	3120-B	0.01	0.05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	E
	Total Chromium as Cr	mg/l	3120-B	0.05	No relaxation	BDI	BDI	BDI	BDI	BDI	BDI	BDI	F
	Mercury as Hg	ua/L	3500-Ha.B	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	E
	<u>Pesticides:</u> α–BHC, β-BHC, γ-BHC, δ-BHC, ο, p-DDT, p, p' –DDT, Endosulfan, β- Endosulfan, Aldrin, Dieldrin	µg/L	6630. D	Absent	0.001	ND	ND	ND	ND	ND	ND	ND	1
	2,4-D, Carboryl (Carbonate) Malathion Methyl Parathion Anilophos, Chloropyriphos	Qualitative Analysis	6630. D	Absent	0.001	ND	ND	ND	ND	ND	ND	ND	ſ
0.	Polyaromatic Hydrocarbons (PAH's): Acenaphthene, Acenaphthylene, Anthracene, B(a)A, B(a)P, B(b)F, B(k)F, Pyrene, Dibenz (a,h) anthracene, Fluoranthene, Fluorene, Indeno (1,2,3-(d) Pyrene, Naphthalene, Phenanthrene, Pyrene, Methyl Naphthalene	µg/L	6440.C			ND	ND	ND	ND	ND	ND	ND	٦

Table 4.4.4 Bacteriological Quality of Drinking Water

ſ					IS: 10500	IS: 10500				RESUL	Г					
	SI. No.	Parameters	Unit	Test Method	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source	GW-3 Basavarajupalli Village					GW-4 Peddapur Village				
							1 st Qtr	2 ^{na} Qtr	3rd Qtr	4th Qtr	1 st Qtr	2 ^{na} Qtr	3rd Qtr	4t Qt	ի r	
	1	Total Coliforms	MPN/100 mL	9221 B	-	-	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.	8	
	2	Fecal Coliforms	MPN/100 mL	9221 E	-	-	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.	8	

4.1 Selection of Sampling Locations

A total of 5 water samples i.e., 3 samples from surface and 2 samples from groundwater were collected and analyzed for various physico-chemical and bacteriological parameters.

SI. No.	Sampling code	Date of Sampling	Sampling Location	Latitude	Longitude
1.	SW-3	17.11.2023	Tank near Dharmaraopeta Village	N 18°20'27.96"	E 79°53'13.89"
2.	SW-4	17.11.2023	Tank near Peddapur Village	N 18°22'10.93"	E 79°54'44.31"
3.	SW-5 17.11.2023		Gundla Vagu U/S	N 18°22'13.45"	E 79°53'57.54"

Table 4.1 Surface Water Sampling Locations

Table 4.2 Groundwater	⁻ Sampling	Locations
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SI. No.	Sampling code	Date of Sampling	Sampling Location	Latitude	Longitude
1.	GW-3	17.11.2023	Basavarajupalli Village	N 18°21' 53.22"	E 79° 52' 53.47"
2.	GW-4	17.11.2023	Peddapur Village	N 18°22'29.97"	E 79°54'23.40"



Table 4.3 Physical-Chemical and Bacteriological Characteristics of Surface Water

Table 4.3.1 Physical-Chemical and Bacteriological Characteristics of Surface Water as per CPCB Water Quality Criteria

						Nator Qualit	v Critoria			RESULT		
SI.No	Parameters	Unit	Test Method	Class A	Class B	Class C	Class D	Class E	SW-3 Tank near Dharmaraopeta Village	SW-4 Tank near Peddapur Village	SW- ! Gund Vagu L	; a /S
1	рН	-	4500-H+B	6.5-8.5	6.5-8.5	6.0 - 9.0	6.5-8.5	6.0-8.5	8.1	8.5	8.1	
2	Electrical Conductivity	µmhos/ cm	2510-B	-	-	-	-	2250 µmhos/cm	540	213	832	
3	Dissolved Oxygen (DO)	mg/L	4500-0.C	6 mg/l or more	5 mg/l or more	4 mg/l or more	4 mg/l or more	-	5.7	5.5	5.4	
4	Bio chemical Oxygen Demand (3 days 27º C)	mg/L	IS: 3025	2 mg/l or less	3 mg/l or less	3 mg/l or less	-	-	1.9	2.2	2.4	
5	Total Coliforms	MPN/ 100mL	9221 B	50 or less	500 or less	5000 or less	-	-	110	140	140	
6	Free Ammonia (as N)	mg/L	4500-NH ₃ -F	-	-	-	1.2 mg/L or less	-	BDL	BDL	BDL	
7	Boron as B	mg/L	3120-В	-	-	-	-	Less than 2 mg/L	0.09	0.06	0.08	
8	SAR	-	-	-	-	-	-	Less than 26	1.70	0.55	1.20	

RESULT						
SI.No	Parameters	Unit	Test Method	SW-3 Tank near Dharmaraopeta Village	SW-4 Tank near Peddapur Village	SW-5 Gundla Vagu U/S
1	Colour	Hazen	2120. B	5	5	5
2	Odour	TON	2150. B	No odour observed	No odour observed	No odour observed
3	Temperature	О°	2550. B	25.3	25.3	25.2
4	Turbidity	NTU	2130. B	4.18	1.61	2.61
5	Total Dissolved Solids at 180° C	mg/L	2540.C	326	142	494
6	Total Suspended Solids at 105°C	mg/L	2540. D	18	8	12
7	Chemical Oxygen Demand	mg/L	5220. D	8	8	16
8	Chlorides as Cl-	mg/L	4500-CIB	30	20	50
9	Sulphates as SO ₄ ²⁻	mg/L	4500-SO42E	20	10	46
10	Fluoride as F ⁻	mg/L	4500-FC	49	12	49
11	Calcium as Ca	mg/L	3500-Ca.B	5.5	0.6	4.6
12	Magnesium as Mg	mg/L	3500-Mg.B	60	18	71
13	Sodium as Na	mg/L	3500-Na.B	55	33	67
14	Potassium as K	mg/L	3500-K.B	0.98	1.01	1.0
15	Nitrites as NO ₂	mg/L	4500-NO2 ⁻ .B	10.96	0.13	1.5
16	Nitrates as NO ₃	mg/L	4500-NO3B	BDL	BDL	BDL
17	Total Phosphates	mg/L	4500-P-D	0.02	0.16	0.04
18	Ammonical Nitrogen as NH ₃ -N	mg/L	4500-NH ₃ -C	BDL	BDL	BDL
19	Phenolic compounds as C ₆ H ₅ OH	mg/L	5530-D	BDL	BDL	BDL
20	Oil & Grease	mg/L	5520. B	<1	<1	<1
21	Carbonates as CO ₃	mg/L	2320. B	Nil	Nil	Nil
22	Bi-carbonates as HCO ₃	mg/L	2320. B	90	70	220
23	Fecal Coliforms	MPN/100mL	9221 E	11	11	14
24	Zinc as Zn	mg/L	3120. B	0.19	0.09	0.13

Table 4.3.2 Physico-Chemical Characteristics of Surface Water at Selected Locations in the Study Area

					RESULT	
SI.No	Parameters	Unit	Test Method	SW-3 Tank near Dharmaraopeta Village	SW-4 Tank near Peddapur Village	SW-5 Gundla Vagu U/S
25	Iron as Fe	mg/L	3120. B	0.49	0.57	0.41
26	Arsenic as As	mg/L	3120. B	BDL	BDL	BDL
27	Lead as Pb	mg/L	3120. B	BDL	BDL	BDL
28	Cadmium as Cd	mg/L	3120. B	BDL	BDL	BDL
29	Total Chromium as Cr	mg/L	3120. B	BDL	BDL	BDL
30	Nickel as Ni	mg/L	3120. B	BDL	BDL	BDL
31	Copper as Cu	mg/L	3120-B	BDL	BDL	BDL
32	Selenium as Se	mg/L	3120-B	BDL	BDL	BDL

Table 4.4 Physico-Chemical, Bacteriological Characteristics of Groundwater Collected within the Study AreaTable 4.4.1 Organoleptic and Physical Parameters

				IS: 10500	IS: 10500	RESL	JLT
S.No.	Parameters	Unit	Test Method	Requirement (Acceptable Limit)	Permissible Limit in the absence of alternate source	GW-3 Basavarajupalli Village	GW-4 Peddapur Village
1.	Colour	Hazen	2120. B	5	15	<5	<5
2.	Odour	TON	2150. B	Agreeable	Agreeable	Agree.	Agree.
3.	рН		4500-H⁺B	6.5 to 8.5	No relaxation	7.9	7.3
4.	Taste	FTN	2160. B	Agreeable	Agreeable	Agree.	Agree.
5.	Turbidity	NTU	2130. B	1	5	0.16	0.24

6.	Total Dissolved Solids at 180°C	mg/L	2540.C	500	2000	838	397
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Table 4.4.2 General Parameters Concerning Substances Undesirable in Excessive Amounts

				IS: 10500	IS: 10500	RES	ULT
S.No.	Parameters	Unit	Test Method	Requirement (Acceptable Limit)	RequirementPermissible Limit in (Acceptable(Acceptablethe absence of alternate source		GW-4 Peddapur Village
1.	Calcium as Ca	mg/L	3500-Ca.B	75	200	88	36
2.	Magnesium as Mg	mg/L	3500-Mg.B	30	100	74	44
3.	Chlorides as Cl-	mg/L	4500-CIB	250	1000	217	65
4.	Sulphates as SO42-	mg/L	4500-SO42E	200	400	91	68
5.	Fluoride as F-	mg/L	4500-FC	1.0	1.5	0.99	0.94
6.	Nitrates as NO3	mg/L	4500-NO3B	45	No relaxation	30	18
7.	Total Alkalinity as CaCO3	mg/L	2320. B	200	600	320	190
8.	Total Hardness as CaCO3	mg/L	2340. C	200	600	524	270
9.	Sulphide as H ₂ S	mg/L	4500-S2-F&D	0.05	No relaxation	BDL	BDL
10.	Total Ammonia-N	mg/L	IS 3025 (Part 34)	0.5	No relaxation	BDL	BDL
11.	Phenolic compounds as C6H5OH	mg/L	5530-D	0.001	0.002	BDL	BDL
12.	Residual free chlorine	mg/L	4500-CIB	0.2	1.0	BDL	BDL
13.	Mineral oil	mg/L	IS:3025 (part 39)	0.5	No relaxation	absent	absent
14.	Anionic Detergents (as MBAS)	mg/L	IS:13428:2005K	0.2	1.0	<0.2	<0.2
15.	Aluminium as Al	mg/L	3120-B	0.03	0.2	0.07	BDL
16.	Barium as Ba	mg/L	3120. B	0.7	No relaxation	0.27	0.19
17.	Boron as B	mg/L	3120-B	0.5	2.4	0.18	0.11

18.	Iron as Fe	mg/L	3120-B	1.0	No relaxation	0.53	0.44
19.	Zinc as Zn	mg/L	3120-B	5	15	0.08	0.11
20.	Copper as Cu	mg/L	3120-B	0.05	1.5	BDL	BDL
21.	Manganese as Mn	mg/L	3120-B	0.1	0.3	BDL	BDL
22.	Selenium as Se	mg/L	3120-B	0.01	No relaxation	BDL	BDL
23.	Silver as Ag	mg/L	3120. B	0.1	No relaxation	BDL	BDL

Table 4.4.3 Parameters Concerning Toxic Substances

				IS: 10500	IS: 10500	RESU	ILT
S.No.	Parameters	Unit	Test Method	Requirement (Acceptable Limit)	Permissible Limit in the absence of alternate source	GW-3 Basavarajupalli Village	GW-4 Peddapur Village
1	Cadmium as Cd	mg/L	3120-B	0.003	No relaxation	BDL	BDL
2	Cyanide as CN-	mg/L	4500-CNF	0.05	No relaxation	BDL	BDL
3	Lead as Pb	mg/L	3120-B	0.01	No relaxation	BDL	BDL
4	Molybdenum as Mo	mg/L	3120. B	0.07	No relaxation	BDL	BDL
5	Nickel as Ni	mg/L	3120-B	0.02	No relaxation	BDL	BDL
6	Total Arsenic as As	mg/L	3120-B	0.01	0.05	BDL	BDL
7	Total Chromium as Cr	mg/L	3120-B	0.05	No relaxation	BDL	BDL
8	Mercury as Hg	µg/L	3500-Hg.B	0.001	No relaxation	BDL	BDL
0	$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	µg/L	6630. D	Absent	0.001	ND	ND
9	2,4-D, Carboryl (Carbonate) Malathion Methyl Parathion Anilophos, Chloropyriphos	Qualitative analysis	6630. D	Absent	0.001	ND	ND
10	Polyaromatic Hydrocarbons (PAH's): Acenaphthene, Acenaphthylene, Anthracene,	µg/L	6440.C	-	-	ND	ND

B(a)A, B(a)P, B(b)F, B(k)F,			
Pyrene, Dibenz (a,h) anthracene,			
Fluoranthene, Fluorene, Indeno			
(1,2,3-(d) Pyrene, Naphthalene,			
Phenanthrene, Pyrene, Methyl			
Naphthalene			

Table 4.4.4 Bacteriological Quality of Drinking Water

	Parameters	Unit		IS: 10500	IS: 10500	RESULT		
S.No.			Test	Requirement	Permissible Limit	GW-3	GW-4	
5.140.	i ai ameters	onit	Method	(Acceptable	in the absence of	Basavarajupalli	Peddapur	
				Limity	alternate source	Village	Village	
1	Total Coliforms	MPN/100 ml	9221 B	-	-	<1.8	<1.8	
2	Fecal Coliforms	MPN/100 ml	9221 E	-	-	<1.8	<1.8	

NTU – Nephelometric Turbidity Unit; BDL – Below Detection Limit

Detection Limits of Aluminium (AI), Antimony (Sb), Arsenic (As), Barium (Ba), Boron (B), Cadmium (Cd), Chromium (Cr)/Total Chromium, Cobalt (Co), Copper (Cu), Iron (Fe), Lead (Pb), Magnesium (Mg), Manganese (Mn), Molybdenum (Mo), Nickel (Ni), Nickel (Ni), Selenium (Se), Silver (Ag), Vanadium (V), Zinc (Zn), Phenols is 0.01mg/L. Detection Limit of Mercury (Hg), Phosphates/Total Phosphates, Nitrites NO2, Free Ammonia, Total Ammonia is 0.02mg/L. Detection Limits of Potassium (K), Sodium (Na) is 0.03mg/L. Detection Limits of Cyanide (CN), Sulfide (S2), Hexavalent Chromium Cr+6 is 0.05mg/L. Detection Limits of Nitrates as NO3, Fluoride is 0.1mg/L. Detection Limits of Residual Free chlorine, Free Available chlorine, 0&G is 1mg/L. Detection Limits of Sulfate SO₄⁻², Ammonical Nitrogen, Total Kjeldhl Nitrogen (TKN), COD, Total Nitrogen (TN) is 5mg/L. BOD-3mg/L. ND-Not Detected; Detection Limit: Pesticides– 0.1 ppm; PAHs – 1 ppm.



SI. No.	Sampling code	Date of Sampling	Sampling Location	Latitude	Longitude
4.	SW-3	08.01.2024	Tank near Dharmaraopeta Village	N 18°20'27.96"	E 79°53'13.89"
5.	SW-4	08.01.2024	Tank near Peddapur Village	N 18°22'10.93"	E 79°54'44.31"
6.	SW-5	08.01.2024	Gundla Vagu U/S	N 18°22'13.45"	E 79°53'57.54"

Table 4.1 Surface Water Sampling Locations

Table 4.2 Groundwater Sampling Locations

SI. No.	Sampling code	Date of Sampling	Sampling Location	Latitude	Longitude
3.	GW-3	08.01.2024	Basavarajupalli Village	N 18°21' 53.22"	E 79° 52' 53.47"
4.	GW-4	08.01.2024	Peddapur Village	N 18°22'29.97"	E 79°54'23.40"

Table 4.3 Physical-Chemical and Bacteriological Characteristics of Surface Water

Table 4.3.1 Physical-Chemical and Bacteriological Characteristics of Surface Water as per CPCB Water Quality

Criteria

		Parameters		Test Method			Vator Quality	v Critoria			RESULT		
SI.No	No		Unit		Class A	Class B	Class C	Class D	Class E	SW-3 Tank near Dharmaraopeta Village	SW-4 Tank near Peddapur Village	SW-5 Gundla Vagu U/	s
		рН	-	4500-H⁺B	6.5-8.5	6.5-8.5	6.0 – 9.0	6.5-8.5	6.0-8.5	8.0	8.3	8.3	
	2	Electrical Conductivity	µmhos/ cm	2510-B	-	-	-	-	2250 µmhos/cm	775	220	845	
	8	Dissolved Oxygen (DO)	mg/L	4500-0.C	6 mg/l or more	5 mg/l or more	4 mg/l or more	4 mg/l or more	-	5.8	5.9	5.1	
	1	Bio chemical Oxygen Demand (3 days 27° C)	mg/L	IS: 3025	2 mg/l or less	3 mg/l or less	3 mg/l or less	-	-	1.8	1.8	2.0	
	5	Total Coliforms	MPN/ 100mL	9221 B	50 or less	500 or less	5000 or less	-	-	220	240	280	
	ò	Free Ammonia (as N)	mg/L	4500-NH₃-F	-	-	-	1.2 mg/L or less	-	BDL	BDL	BDL	
	7	Boron as B	mg/L	3120-В	-	-	-	-	Less than 2 mg/L	0.23	0.18	0.07	
	3	SAR	-	-	-	-	-	-	Less than 26	1.39	0.76	1.37	

					RESULT	
SI.No	Parameters	Unit	Test Method	SW-3 Tank near Dharmaraopeta Village	SW-4 Tank near Peddapur Village	SW-5 Gundla Vagu U/S
1	Colour	Hazen	2120. B	5	5	5
2	Odour	TON	2150. B	No odour observed	No odour observed	No odour observed
3	Temperature	°C	2550. B	25.7	25.6	25.7
4	Turbidity	NTU	2130. B	6.9	1.5	7.8
5	Total Dissolved Solids at 180° C	mg/L	2540.C	458	130	498
6	Total Suspended Solids at 105°C	mg/L	2540. D	28	14	23
7	Chemical Oxygen Demand	mg/L	5220. D	8	8	8
8	Calcium as Ca	mg/L	3500-Ca.B	66	16	80
9	Magnesium as Mg	mg/L	3500-Mg.B	24	8	26
10	Sodium as Na	mg/L	3500-Na.B	52	15	55
11	Potassium as K	mg/L	3500-K.B	9.4	0.73	2.2
12	Chlorides as Cl-	mg/L	4500-CIB	82	21	116
13	Sulphates as SO ₄ ²⁻	mg/L	4500-SO ₄ ²⁻ .E	74	32	70
14	Fluoride as F-	mg/L	4500-FC	0.9	0.2	0.7
15	Nitrates as NO ₃	mg/L	4500-NO ₃ B	2.35	0.09	0.72
16	Nitrites as NO ₂	mg/L	4500-NO2 ⁻ .B	1.01	BDL	BDL
17	Total Phosphates	mg/L	4500-P-D	1.36	0.79	0.82
18	Ammonical Nitrogen as NH ₃ -N	mg/L	4500-NH ₃ -C	BDL	BDL	BDL
19	Phenolic compounds as C ₆ H ₅ OH	mg/L	5530-D	BDL	BDL	BDL
20	Oil & Grease	mg/L	5520. B	<1	<1	<1
21	Carbonates as CO ₃	mg/L	2320. B	Nil	Nil	Nil
22	Bi-carbonates as HCO ₃	mg/L	2320. B	230	55	230
23	Fecal Coliforms	MPN/100mL	9221 E	20	23	33
24	Zinc as Zn	mg/L	3120. B	0.17	0.21	0.13
25	Iron as Fe	mg/L	3120. B	0.52	0.47	0.63
26	Arsenic as As	mg/L	3120. B	BDL	BDL	BDL

Table 4.3.2 Physico-Chemical Characteristics of Surface Water at Selected Locations in the Study Area

				RESULT			
SI.No	Parameters	Unit	Test Method	SW-3 Tank near Dharmaraopeta Village	SW-4 Tank near Peddapur Village	SW-5 Gundla Vagu U/S	
27	Lead as Pb	mg/L	3120. B	BDL	BDL	BDL	
28	Cadmium as Cd	mg/L	3120. B	BDL	BDL	BDL	
29	Total Chromium as Cr	mg/L	3120. B	BDL	BDL	BDL	
30	Nickel as Ni	mg/L	3120. B	BDL	BDL	BDL	
31	Copper as Cu	mg/L	3120-B	BDL	BDL	BDL	
32	Selenium as Se	mg/L	3120-B	BDL	BDL	BDL	

Table 4.4 Physico-Chemical, Bacteriological Characteristics of Groundwater Collected within the Study AreaTable 4.4.1 Organoleptic and Physical Parameters

				IS: 10500	IS: 10500	RESL	JLT
S.No.	Parameters	Unit	Test Method	Requirement (Acceptable Limit)	Permissible Limit in the absence of alternate source	GW-3 Basavarajupalli Village	GW-4 Peddapur Village
7.	Colour	Hazen	2120. B	5	15	<5	<5
8.	Odour	TON	2150. B	Agreeable	Agreeable	Agree.	Agree.
9.	рН		4500-H⁺B	6.5 to 8.5	No relaxation	8.0	7.8
10.	Taste	FTN	2160. B	Agreeable	Agreeable	Agree.	Agree.
11.	Turbidity	NTU	2130. B	1	5	0.44	0.53
12.	Total Dissolved Solids at 180°C	mg/L	2540.C	500	2000	795	445

				IS: 10500	IS: 10500	RESULT	
S.No.	Parameters	Unit	Test Method	Requirement (Acceptable Limit)	Permissible Limit in the absence of alternate source	GW-3 Basavarajupalli Village	GW-4 Peddapur Village
24.	Calcium as Ca	mg/L	3500-Ca.B	75	200	69	64
25.	Magnesium as Mg	mg/L	3500-Mg.B	30	100	55	35
26.	Chlorides as CI-	mg/L	4500-CIB	250	1000	206	66
27.	Sulphates as SO42-	mg/L	4500-SO42E	200	400	98	62
28.	Fluoride as F-	mg/L	4500-FC	1.0	1.5	0.9	0.8
29.	Nitrates as NO3	mg/L	4500-NO3B	45	No relaxation	40	25
30.	Total Alkalinity as CaCO3	mg/L	2320. B	200	600	310	235
31.	Total Hardness as CaCO3	mg/L	2340. C	200	600	434	304
32.	Sulphide as H ₂ S	mg/L	4500-S2-F&D	0.05	No relaxation	BDL	BDL
33.	Total Ammonia-N	mg/L	IS 3025 (Part 34)	0.5	No relaxation	BDL	BDL
34.	Phenolic compounds as C6H5OH	mg/L	5530-D	0.001	0.002	BDL	BDL
35.	Residual free chlorine	mg/L	4500-CIB	0.2	1.0	BDL	BDL
36.	Mineral oil	mg/L	IS:3025 (part 39)	0.5	No relaxation	absent	absent
37.	Anionic Detergents (as MBAS)	mg/L	IS:13428:2005K	0.2	1.0	<0.2	<0.2
38.	Aluminium as Al	mg/L	3120-В	0.03	0.2	0.07	BDL
39.	Barium as Ba	mg/L	3120. B	0.7	No relaxation	0.11	0.25
40.	Boron as B	mg/L	3120-B	0.5	2.4	0.17	0.1
41.	Iron as Fe	mg/L	3120-B	1.0	No relaxation	0.66	0.39
42.	Zinc as Zn	mg/L	3120-B	5	15	0.14	0.19
43.	Copper as Cu	mg/L	3120-B	0.05	1.5	BDL	BDL
44.	Manganese as Mn	mg/L	3120-B	0.1	0.3	BDL	BDL
45.	Selenium as Se	mg/L	3120-B	0.01	No relaxation	BDL	BDL
46.	Silver as Ag	mg/L	3120. B	0.1	No relaxation	BDL	BDL

Table 4.4.2 General Parameters Concerning Substances Undesirable in Excessive Amounts

		Unit	Test	IS: 10500	IS: 10500	RESULT	
S No	Baramotore			Requirement	Permissible Limit	GW-3	GW-4
3.NO.	Parameters	Unit	Method	(Acceptable	in the absence of	Basavarajupalli	Peddapur
				Limit)	alternate source	Village	Village
1	Cadmium as Cd	mg/L	3120-B	0.003	No relaxation	BDL	BDL
2	Cyanide as CN-	mg/L	4500-CN ⁻ .F	0.05	No relaxation	BDL	BDL
3	Lead as Pb	mg/L	3120-B	0.01	No relaxation	BDL	BDL
4	Molybdenum as Mo	mg/L	3120. B	0.07	No relaxation	BDL	BDL
5	Nickel as Ni	mg/L	3120-B	0.02	No relaxation	BDL	BDL
6	Total Arsenic as As	mg/L	3120-B	0.01	0.05	BDL	BDL
7	Total Chromium as Cr	mg/L	3120-B	0.05	No relaxation	BDL	BDL
8	Mercury as Hg	µg/L	3500-Hg.B	0.001	No relaxation	BDL	BDL
9	Pesticides: α -BHC, β-BHC, β -BHC, δ-BHC, o,p-DDT, -DDT, Endosulfan, Endosulfan, Aldrin, Dieldrinγ-	µg/L	6630. D	Absent	0.001	ND	ND
	2,4-D, Carboryl (Carbonate) Malathion Methyl Parathion Anilophos, Chloropyriphos	Qualitative analysis	6630. D	Absent	0.001	ND	ND
10	Polyaromatic Hydrocarbons (PAH's): Acenaphthene, Acenaphthylene, Anthracene, B(a)A, B(a)P, B(b)F, B(k)F, Pyrene, Dibenz (a,h) anthracene, Fluoranthene, Fluorene, Indeno (1,2,3-(d) Pyrene, Naphthalene, Phenanthrene, Pyrene, Methyl Naphthalene	µg/L	6440.C	-	-	ND	ND

Table 4.4.3 Parameters Concerning Toxic Substances

	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limit in the absence of alternate source	RESULT	
S.No.						GW-3 Basavarajupalli Village	GW-4 Peddapur Village
1	Total Coliforms	MPN/100 ml	9221 B	-	-	<1.8	<1.8
2	Fecal Coliforms	MPN/100 ml	9221 E	-	-	<1.8	<1.8

Table 4.4.4 Bacteriological Quality of Drinking Water

NTU – Nephelometric Turbidity Unit; BDL – Below Detection Limit

Detection Limits of Aluminium (Al), Antimony (Sb), Arsenic (As), Barium (Ba), Boron (B), Cadmium (Cd), Chromium (Cr)/Total Chromium, Cobalt (Co), Copper (Cu), Iron (Fe), Lead (Pb), Magnesium (Mg), Manganese (Mn), Molybdenum (Mo), Nickel (Ni), Nickel (Ni), Selenium (Se), Silver (Ag), Vanadium (V), Zinc (Zn), Phenols is 0.01mg/L. Detection Limit of Mercury (Hg), Phosphates/Total Phosphates, Nitrites NO2, Free Ammonia, Total Ammonia is 0.02mg/L. Detection Limits of Potassium (K), Sodium (Na) is 0.03mg/L. Detection Limits of Cyanide (CN), Sulfide (S2), Hexavalent Chromium Cr+6 is 0.05mg/L. Detection Limits of Nitrates as NO3, Fluoride is 0.1mg/L. Detection Limits of Residual Free chlorine, Free Available chlorine, 0&G is 1mg/L. Detection Limits of Sulfate SO₄⁻², Ammonical Nitrogen, Total Kjeldhl Nitrogen (TKN), COD, Total Nitrogen (TN) is 5mg/L. BOD-3mg/L. ND-Not Detected; Detection Limit: Pesticides– 0.1 ppm; PAHs – 1 ppm.