

GBL/SMR/MoEF&CC/2022-23/700

Date: 30.05.2022

Godavari Biorefineries Ltd

The Additional Principal Chief Conservator of Forests(C) Ministry of Environment, Forests & Climate Change, Bengaluru

Sub: Half yearly compliance report for the period of October 2021 to March 2022

Ref:: File No12.1/633/2009-10/KAR/706

- EC No. 1) F No, J 11011/191/2007-IA II(1) dated 9th April 2020 2) F No. J-11011/272/2009-IA II(1) dated 7th July 2009 3) F No. J-11011/272/2009-IA II(1) dated 1st June 2011 4) F No. J-11011/272/2009-IA II(1) dated 3rd Feb 2015

With reference to the above subject herewith we are submitting the half yearly compliance report for the period October 2021 to March 2022 . The details are as follows

SINo	Description	Details
1.	Name of the Industry	Godavari Biorefineries Limited (Distillery Division) Sameerwadi-587316
2.	Person Responsible	Tal: Mudhol, Dist : Bagalkot Shri. Mahesh Kenjale
3.	Email.ID	General Manager
ł.	Phone No/ Mobile	kenjale.mahesh@somaiya.com 08350-260081
	Web site details	+916364859102
5.	Environmental Clearance details	www.somaiya.com F No, J 11011/191/2007-IA II(1) dated 9 th April 2020 F No. J-11011/272/2009-IA II(1) dated 7 th July 2009 FNo. J-11011/272/2009-IA II(1) dated 1 st June 2011 F No. J-11011/272/2009-IA II(1) dated 3 rd Feb 2015
	Working days (Days)	149.4

Works: P O Sameerwadi, Tal Mudhol, Dist Bagalkot, Karnataka State - 587 316. INDIA 1 Tel : (91-08350) 260046/ 47/ 48 Fax : (91-08350) 260037 Gram : "SUGAR MILLS" Sameerwadi

Regd. Office : Somaiya Bhavan, 45/47, Mahatma Gandhi Road, Fort, Mumbai - 400 001 INDIA.
Tel : (91-22) 2204 8272 / 2285 8430 Fax : (91-22) 2204 7297 www.somaiya.com

GST No: 29AABCG2543C1ZZ

<u>Sub:</u> Expansion of distillery unit from 320 KLPD to 400 KLPD by M/s Godavari Biorefineries Lt (Distillery division) at Sy. No.16 & 17 of Saidapur Village, Sy. No. 45,46 of Handigund Village, Sy. No. 74 & 75 of Madbhavi Village Sameerwadi Village, Tehsil Mudhol, Bagalkot (Karnataka), Environmental Clearance -regarding

Specific Condition

Sl No	Conditions	Compliance
(i)	Necessary permission as mandated under the water (prevention and control of Pollution) Act,1974 and the air (prevention and control of pollution) Act, 1981, as applicable from time to time, shall be obtained from the state pollution control Board as required.	Industry has obtained renewed Consent for Operation from state pollution control Board. The details are as follows, Consent for operation bearing number AW 326255 dated 18 th August 2021 and valid upto 30.06.2026.
(ii)	As already committed by the project proponent, Zero Liquid Discharge shall be ensured and no waste/treated water shall be discharged outside the premise. The reuse of treated effluent in gardening/ horticulture shall not be considered as ZLD.	The raw spentwash generation from the plant is varying from 1800 to 1900 KLD. All the spent wash volume is reduced in three stage evaporation and fed to Incineration boiler of 40 TPH capacity. Industry has provided two no's of condensate polishing unit 1.Biological treatment plant - cap-1650 KLD 2.RO plant - cap: 1680 KLD The spentless and process condensate generated from the process are as follows Spentless: 550 - 600 KLD Process condensate: 1600 -1700 KLD The process condensate generated from the evaporation and spentless from the process are treated in the biological treatment plant and recycled back to cooling tower for makeup.
(iii)	The spent wash after Biomethanation in the anaerobic digester shall compost with press mud. An area of 26 Acres shall be earmarked for compost yard. The compost shall be lined with HDPE sheets and construction of compost yard shall be as per the CPCB guidelines. The unit shall be using biocomposting method of Spent wash treatment technology along with multiple effect evaporaper (MEE) followed by incineration in the boiler to achieve zero liquid discharge. The total operating days of the plant will be 330 days.	Industry has Biomethanisation plant of capacity 1000 M3/d & earmarked an area of 26 RCC concerted area for the Biocomposting. The biocompost area is constructed as per the CPCB guidelines. Industry also provided three stage evaporation followed by 40 TPH incineration boiler for the disposal of spentwash. The photographs of Biocompost yard, Evaporation system and incineration boiler are enclosed as Exhibit No-1 Industry ensures the operation days will not exceed 330 days.

(iv)	Necessary authorization required under the hazardous and other wastes (Management and Trans-Boundary Movement) Rules, 2016, Solid Waste Management Rules, 2016 shall be obtained and the provisions contained in the rules shall be strictly adhered to.	Industry has obtained the authorization for the management of Hazardous waste from Karnataka state pollution control Board bearing authorization number 328581 dated 07.12.2021 and valid upto 30 th June 2026 Authorization copy enclosed as Exhibit No-2
(v)	To control source and the fugitive emissions, stable pollution control devices shall be installed to meet the prescribed norms and/or the NAAQS. The gaseous emissions shall be dispersed through stack of adequate height as per CPCB/SPCB guidelines	Industry has provided the RCC concrete roads inside the premises for the control fugitive emissions and takes utmost care to control fugitive emissions. Industry also installed cooling system for the molasses storage tanks to control the gaseous emissions during the summer season. Industry has provided stack of height 81 meters at boiler for dispersing the gaseous emissions.
(vi)	Odour shall be prevented at the source and effective odour management scheme shall be implemented.	The effluent spraying at biocompost is carried through mechanical spraying system to minimize the additional quantity. This will minimize the spillage of effluent in biocompost yard and is effective in minimizing the odour. The pressmud generated from the sugar unit transported through covered vehicles to minimize the odour.
(vii)	Total fresh water requirement shall not exceed 1000 m3/day proposed to be met from River Ghataprabha. Prior permission shall be obtained from the concerned regulatory authority/CGWA.	Industry ensures the fresh water consumption will not exceed 1000 m3/day. Water drawl permission obtained from water resources department, Government of Karnataka is enclosed as Exhibit No-3.
(vii i)	Hazardous chemicals shall be stored in tanks, tank farms, drums, carboys etc. Flame arresters shall be provided on tank farm and the solvent transfer through pumps.	The ethanol is stored in the MS steel tanks with proper roofing and dyke wall. The storage area is covered with fire hydrant system and chemical extinguisher is provided near tanks. Industry has obtained the PESO license and as per the guidelines the measures are taken for the storage of ethanol.
(ix)	Process organic residue and spent carbon, if any, shall be sent to cement industries. ETP sludge, process inorganic & evaporation salt shall be disposed off to the TSDF.	The sludge of quantity 250-300 MT per annum generated from the primary ETP is utilized in the biocompost process and sold as manure.

(x)	The Company shall strictly comply	Noted and agreed for the condition.
	with the rules and guidelines under	
	Manufacture, Storage, and Import of	
	Hazardous Chemicals (MSIHC) Rules, 1989 as amended time to time. All	
	transportation of Hazardous	
	Chemicals shall be as per the motor	
	vehicle Act (MVA), 1989.	
(xi)	The Company shall undertake waste	Industry ensures and undertakes all the
(X1)	minimization measures as below:-	waste minimization measures.
	a. Metering and control of	waste minimization measures.
	quantities if active	Industry has installed the biological
	ingredients to minimize	treatment plant as well as RO plant for
	waste.	the treatment of process condensate
	b. Reuse of by-products from	and spentless generated from the plant
	the process as raw	and the treated water recycled back to
	materials or as material	cooling tower to minimize the fresh
	substitutes in other	water consumption.
	processes.	
	c. Use of automated filling to	Industry utilizing the high pressure hoses
	minimize spillage.	i,e 400 -700 kg/cm2 for the cleaning of
	d. Use of close Feed system	evaporator body tubes.
	into batch reactors.	Photographs of Hydrojot machine are
	e. Venting equipment through vapour recovery system.	Photographs of Hydrojet machine are enclosed as Exhibit No-4
	f. Use of high pressure hoses	enclosed as Exhibit No-4
	for equipment cleaning to	
	reduce waste water	
	generation.	
	3 0	
(xii	The green belt of 5-10 m width shall	Industry already developed the green
)	be developed in more than 33 % of	belt area around 126 acres. Industry is
	the total project area, mainly along	developing the green belt along the
	the plant periphery, in downward	plant periphery and along the road
	wind direction, and along road sides	sides.
	etc. selection of plant species shall	
	be as per the CPCB guidelines in	The green belt photographs are enclosed
	consultation with the state Forest	as Exhibit No-5
():	Department. As committed, funds allocation for	The expanditure details for the
(xii i)	the corporate Environment	The expenditure details for the corporate social responsibility for the
'/	Responsibility (CER) shall be 1.5 % of	last three years are enclosed as Exhibit
	the total project cost. Item-wise	no-6.
	details along with time bound action	
	plan shall be prepared and submitted	
	to the Ministry of Regional office.	
(xi	For the DG sets, emission limits and	Acoustic measures are provided for the
v)	the stack height shall be in	320 KVA DG set and chimney is also
V		
*	conformity with the extant	provided 6 mtrs above roof level.
v)		provided 6 mtrs above roof level. Chimney height of 81 mtrs is provided at
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	conformity with the extant	
V)	conformity with the extant regulations and the CPCB guidelines.	Chimney height of 81 mtrs is provided at Incineration boiler as per the extant regulations of CPCB.
٧)	conformity with the extant regulations and the CPCB guidelines. Acoustic enclosure shall be provided	Chimney height of 81 mtrs is provided at Incineration boiler as per the extant

(xv)	The unit shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling. Firefighting system shall be as per the norms.	Industry has provided fire hydrant line inside and outside of the plant and taken all safety measures required during any emergency.
(xv i)	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Occupation health check up of the employees is carried out regularly and records are maintained at Occupational health center located in the industry premises.
(xv ii)	There shall be adequate space inside the plant premises earmarked for parking to be allowed outside on public places.	Industry has earmarked an area of three acres as parking space for the tankers. Photograph of parking space is enclosed as Exhibit No-8
(xv iii)	Storage of raw materials shall be either stored in silos or in covered areas to prevent dust pollution and other fugitive emission.	The raw material such as molasses is stored in the steel tanks with proper roofing. Dyke wall is provided surrounding the tanks to take care of any spillages. The coal is stored in coal storage shed. Bag filter is provided at coal crusher for minimizing the fugitive emissions. Photo graphs of coal yard, bag filter are enclosed as Exhibit No-9.
(xi x)	Continues online (24x7) monitoring system for stack emissions shall be installed for, measurement of flue gas discharge and the pollutants concentration, and the data to be transmitted to the CPCB and SPCB server. For ZLD, the unit shall install web camera with night vision capability and flow meters in the channel/drain carrying effluent within the premises. For continues discharge the unit shall be install pH, TSS, BOD, COD, and flow meter at the ETP outlet.	Industry has installed online emission monitoring system for flue gas PM measurement, flowmeters as well as PTZ camera are installed and are CPCB and KSPCB. The Photo graphs of Online emission monitoring and Flow meters are enclosed as Exhibit No-10

General conditions

Sl No	Conditions	Compliance
(i)	The project proponent shall obtain all other statutory/ necessary permissions / recommendations /NOCs prior to start of construction/operation of the project, which inter alia include, permissions/approvals under the forest (Conservation) Act, 1980; the wildlife (protections) Act,1972; the Coastal Regulation Zone Notification, 2019, as amended from time to time, and other Office memoranda/Circular issued by the Ministry of Environment, Forest and Climate Change from time to time, as applicable to the project.	Noted the condition for compliance
(ii)	The project proponent shall ensure compliance of 'National Emission standers', as applicable to the project, issued by the Ministry from time to time. The project proponent shall also abide by the rules/regulations issued by the CPCB/SPCB for control/abatement of pollution.	Industry abides by the condition. The Ambient Air Quality reports are enclosed as Exhibit No- 11.
(iii)	The project authorities shall adhere to the stipulations made by the state pollution Control Board/Committee, Central Pollution Control Board, State Government and any other statutory authority.	Noted the condition for compliance.
(iv)	The project proponent shall prepare a site specific conservation plan and wildlife management plan in case of the presence of schedule-1 species in the study area, as applicable to the project, and submit to Chief wild life warden for approval. The recommendations shall be implemented in consultation with the state Forest/Wildlife Department in a time bound manner.	Industry does not fall under the schedule -1 for the management of forest / wildlife.
(v)	No further expansion or modifications in the plant, other than mentioned in the EIA Notification, 2006 and its amendments, shall be carried out without prior approval of the Ministry of Environment, Forest and climate change. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	Noted & agreed

(vi)	The energy source for lighting purpose shall be preferably LED based, or advance having preference in energy conservation and environment betterment.	Industry already implemented LED based lighting system inside and outside the industry premises for the conservation of energy and betterment of environment. Photo graphs of LED based lighting system is enclosed as Exhibit No-12
(vii)	The locations of ambient air quality monitoring stations shall be decided in consultation with State Pollution Control Board (SPCB) and it shall be ensured that at least one station each is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.	Industry has located two ambient air quality monitoring stations in consultation with state pollution control board and monitoring throughout the year on monthly basis. The reports are submitted Regional office KSPCB Bagalkot. Ambient Air quality are enclosed in exhibit no-11.
(viii)	The National ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16 th November, 2009 shall be followed.	Industry abides by the condition.
(ix)	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	Industry monitoring the noise levels in and around the plant premises and measures are taken to maintain the noise levels as per ambient air quality standards prescribed under Environment protection Act 1986 Rules,1989. The noise monitoring report are enclosed in exhibit No-11
(x)	The Company shall harvest rain water from the roof tops of the buildings and storm water drains to recharge the ground water and to utilize the same for process requirements.	Industry has provided three numbers of rain water harvesting tanks inside and outside premises The Photo graphs of rain water harvesting tanks are enclosed as exhibit No-13
(xi)	Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall ne imparted.	Industry is having full pledged safety department consisting of safety manager, safety supervisors and safety guards. Safety Training programme are conducted periodically and training is provided to all departments. Industry has provided personal protective equipment (PPE) for all employees such as Helmets, masks, gumboots, hand gloves and safety google for the chemical handling staff.
(xii)	The company shall also comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, and risk mitigation measures relating to the project shall be implemented.	Industry abides by the condition. Onsite emergency plan is enclosed as exhibit no-14

(xiii)	The Company shall undertake all relevant measures for improving the socio-economic conditions of the surrounding area. CER activities shall be undertaken by involving local villages and administration and shall be implemented.	Industry is having full pledged Corporate Social Responsibility department and carrying out various programs such as Help a Child (for Poor farmers surrounding the industry), Medical camps, tailoring classes for women empowerment.
(xiv)	The Company shall undertake eco- developmental measures including community welfare measures in the project area for overall improvement of the environment.	Industry abide by the condition.
(xv)	A separate Environmental Management Cell (having qualified person with Environmental Science/Environmental Engineering /specialization in the project area) equipped with full-fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.	Industry is having full pledged Environment management cell and laboratory facilities to carry out the Environmental monitoring on day today basis. 1) B.R.Bakshi- Executive Director 2) M.D.Kenjale-General Manager (Distillery) 3) K.V.Goudar- AGM(Biocompost) 4) R.N.Desai - Dy. Manager(Production) 5) B B Khandgavi- Manager(Biocompost) 6) R V Deshpande- Asst. Manager(Safety) 7) A V Kulkarni - Asst.Mgr (Biogas) 8) K.S.Malabadi- Sr. Officer (Biogas) 9) Dr. Anadani - Medical Officer
(xvi)	The Company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment, Forest and climate Change as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management/pollution control measures shall not be diverted for any other purpose.	Industry abides by the condition. The details are as follows Capital Cost :Rs 7935 lakhs Recurring Cost : water - Rs 495.42 lakhs
(xvii)	A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, Zilla Parishad/Municipal Corporation, urban local Body and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal.	Industry has submitted the Environment Clearance letters to local gram Panchayat and acknolgement copy of the same is enclosed as Exhibit No-15
(xviii)	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental clearance conditions including result of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and SPCB. A copy of Environmental Clearance and six monthly compliance status report shall be posted on the website of the company.	Industry is regularly submitting the six monthly compliance report through email to regional office MoEF&CC Bengaluru and hard copy sent to zonal office CPCB and state pollution control board.

(xix)	The environmental statement for each financial year ending 31 st march in form-V as is mandated shall be submitted to the concerned State pollution Control Board as prescribed under the environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of MoEF&CC by e-mail.	Industry is regularly submitting the Environmental statement to state pollution control board before 31 st September every year.
(xx)	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at website of the Ministry and at https://parivesh.nic.in/ . this shall advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional Office of the Ministry.	Industry circulated the accordance information of Environment Clearance in two local newspapers and copy of the same is enclosed as Exhibit No -16.
xxi	The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.	Industry has obtained the Consent for establishment from state pollution control board on 09 th October 2020 and Consent for operation on 12 th November 2020. Start of the project -28 th October 2020
xxii	This Environmental clearance is granted subject to final outcome of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, if any, as may be applicable to the project.	Noted for compliance

Place: Sameerwadi Date: 30.05.2022



Yours faithfully For Godavari Biorefineries Limited

> Mahesh Kenjale General Manager

> > 9

ETP Photographs Exhibit No-1

Integrated Evaporation (Falling film type)



Ist Stage Evaporation (Falling Film



IInd stage Evaporation (Forced circulation)



Incineration Boiler -40 TPH



26 Acres of RCC Biocomposting Yard



Aerotiller Mixing Mahine



Bull Make Mixing Mchine



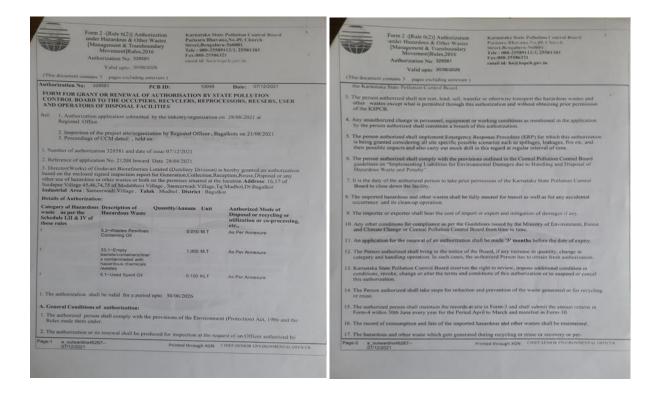
Condensate Polishing Unit (RO System)



Condensate Polishing Unit (Biological) System



Hazardous waste authorization from KSPCB





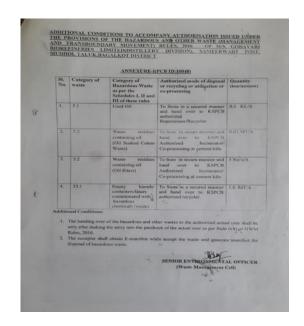
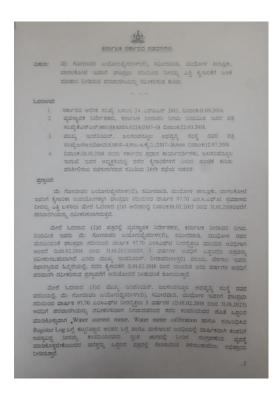
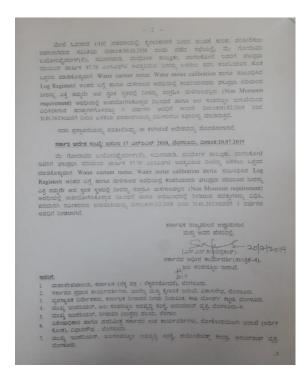
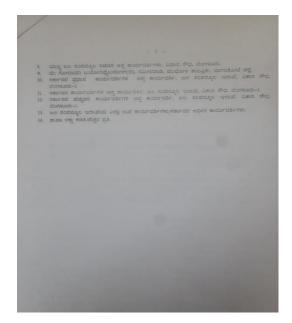


Exhibit No-3

Water drawl permission from water resources department GOK.







High Pressure Hydro jet machines





Greenbelt area Exhibit No-5





CSR expenditure of GBL Sameerwadi from 2016-17 to 2021-22

No.	Project name	2021-22	20-21	19-20	18-19	17-18	16-17	Total
1	Promotion of education	40	8.5	19.13	26.57	52.04	91.55	237.79
2	Promoting health care	73.63	10.9		3.21	0.4	2.96	91.1
3	Women empowerment	1.21	0.75	3.53	1.37	3.18	5.49	15.53
4	Environmental sustainability	-	5.71	-	34.88	-	30.55	71.14
5	Promote to rural sports	-	-	-	-	9.2	9.2	18.4
	Total	114.84	25.86	22.66	66.03	64.82	139.75	433.96

320 KVA DG set Chimney



Parking space for the tankers





Exhibit No-9

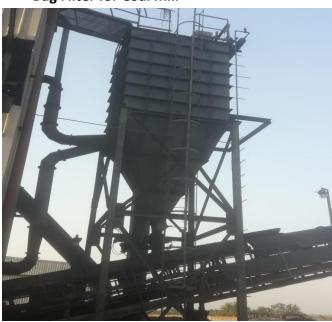
Coal Storage Shed



ESP Ash Collection Xylo



Bag Filter for Coal mill

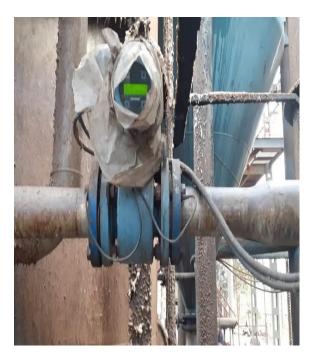


Online emission Monitoring Sensor





Flow meters





***** Boiler Stack monitoring results: -

Month &	ler					
Year		Stack ID- 1.	7 mtr, Height – 81 mtr			
	F	uel: Concentrated Spe	ent wash & Coal, Fuel Ra	tio: 65 :35		
	Flue gas	Flue gas Outlet	Particulate matter	SO2	NOX	
	velocity	temp	(SPM)	mg/nm3	mg/Nm3	
	(m/Sec)	deg C	mg/Nm3			
November 2021	12.6	147	80	45	32	
December 2021	12.9	145	82	46	33	
January 2022	12.7	143	86	44	29	
February 2022	12.8	147	85	47	34	
March 2022	12.9	145	85	46	33	

❖ Ambient Air quality monitoring details:

Month & Year	Location	Wind direction	Parameters			
	Sampling station		PM 2.5	PM ₁₀	NO _x	SO ₂
			μg/m ³	μg/m ³	μg/m ³	μg/m ³
November .2021	Near distillery gate	Easterly	25	70	10.0	8.0
	Near BTP plant		24	67	10.0	8.0
December 2021	Near distillery gate	Easterly	31	74	14.00	10.00
	Near BTP plant		30	71	12.00	10.00
January 2022	Near distillery gate	Easterly	30	70	12.00	10.00
	Near BTP plant	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	28	68	10.00	08.00
February 2022	Near distillery gate	Easterly	32	75	15.00	12.00
	Near BTP plant		30	72	12.00	10.00

March 2022	Near distillery gate	Easterly	33	78	15.00	12.00
With 2022	Near BTP plant	Lasterry	31	73	12.00	10.00

***** Electrostatic Precipitator Meter reading :

Sl No	Month	Working days	Initial Reading	Final reading	Total	KWH
					MWH	
1	Oct.21	5.9	1516.88	1524.37	7.49	7490
2	Nov . 2021	25.2	1524.37	1564.01	39.64	39640
3	Dec .2021	30.8	1564.01	1606.00	41.99	41990
4	Jan .2022	30.7	1606.00	1649.92	43.92	43920
5	Feb .2022	27.3	1649.92	1687.86	37.94	37940
6	March .2022	29.5	1687.86	1727.75	39.89	39890
	Total					210870
	Average unit					

❖ Noise Level Measurement Report:

Sl No	Location	Sampling time	17.12.2022	24.03.2022
			dB(A) Leq
1	Distillery main gate	Day	55.9	57.2
		Night	51.2	51.5
2.	Distillery plant	Day	69.3	68.7
		Night	66.1	65.5
3.	Near Boiler	Day	72.4	72.3
		Night	69.8	69.3
4.	Near BTP plant	Day	65.7	65.1
		Night	61.5	61.4
5.	Compost yard	Day	59.2	58.6
	_	Night	50.1	50.2

* Trade Sample Analysis report: Raw Spent wash

Sl	Parameter	Unit		Result		Test method
No						
			1	2	3	
			24.11.21	17.12.21	12.01.22	
1	pН		2.68	3.58	3.16	IS: 3025(P-11)1983
2	COD	mg/lit	31535	34538	42454	IS: 3025(P-58) 2006
3	BOD	mg/lit	1517	14830	18668	IS: 3025(P-44)1993
4	Total solids	mg/lit	68460	56930	66022	APHA 22 nd edition2012,2540 B
5	Total Volatile solids	mg/lit	31950	30480	35280	APHA 22 nd edition2012, 240-

						E,G
6	Total Inorganic solids	mg/lit	36510	26450	30742	APHA 22 nd edition2012, 2540 C
7.	Chlorides	mg/lit	2578	2191	2276	IS: 3025(P-32)1988
8.	Sulphates	mg/lit	3560	3368	3122	IS: 3025(P-24)1986
9	Potash	mg/lit	9100	8400	8640	IS: 3025(P-45)1993

Sl No	Parameter	Unit	Re	esult	Test method
			4	5	
			11.02.2022	24.03.2022	
1	pН		2.59	2.84	IS: 3025(P-11)1983
2	COD	mg/lit	70781	44356	IS: 3025(P-58) 2006
3	BOD	mg/lit	29053	18207	IS: 3025(P-44)1993
4	Total solids	mg/lit	95960	65340	APHA 22 nd edition2012,2540 B
5	Total Volatile solids	mg/lit	61180	39190	APHA 22 nd edition2012, 240- E,G
6	Total Inorganic solids	mg/lit	34780	26150	APHA 22 nd edition2012, 2540 C
7.	Chlorides	mg/lit	4715	4638	IS: 3025(P-32)1988
8.	Sulphates	mg/lit	3940	2965	IS: 3025(P-24)1986
9	Potash	mg/lit	12500	9600	IS: 3025(P-45)1993

❖ Trade sample Analysis report: Spent wash sample after Integrated Evaporation (IMEE)

Sl No	Parameter	Unit	Result			Test method
			1	2	3	
			24.11.21	12.01.22	24.03.22	
1	pH		2.50	2.96	2.81	IS: 3025(P-11)1983
2	COD	mg/lit	63900	86530	74962	IS: 3025(P-58) 2006
3	BOD	mg/lit	22310	36724	30520	IS: 3025(P-44)1993
4	Total solids	mg/lit	97480	106650	95370	APHA 22 nd edition2012,2540

						В
5	Total Volatile solids	mg/lit	62720	64884	51580	APHA 22 nd edition2012, 240- E,G
6.	Total Inorganic solids	mg/lit	35120	41766	43790	APHA 22 nd edition2012, 2540 C
7.	Chlorides	mg/lit	3257	7125	5109	IS: 3025(P-32)1988
8.	Sulphate	mg/lit	3760	6891	3128	IS: 3025(P-24)1986
9.	Potash	mg/lit	9500	11168	11300	IS: 3025(P-45)1993

❖ Trade sample Analysis report: Spentwash sample after 1st Stage Evaporation

Sl No	Parameter	Unit	R	esult	Test method
			1	2	
			24.11.21	1712.2021	
1	pН		2.37	2.91	IS: 3025(P-11)1983
2	COD	mg/lit	109958	84.050	IS: 3025(P-58) 2006
3	BOD	mg/lit	47080	35730	IS: 3025(P-44)1993
4	Total solids	mg/lit	152460	108360	APHA 22 nd edition2012,2540 B
5	Total Volatile solids	mg/lit	70330	61910	APHA 22 nd edition2012, 240- E,G
6.	Total Inorganic solids	mg/lit	82130	46450	APHA 22 nd edition2012, 2540 C
7.	Chlorides	mg/lit	8290	7705	IS: 3025(P-32)1988
8.	Sulphate	mg/lit	7610	6920	IS: 3025(P-24)1986
9.	Potash	mg/lit	12600	11300	IS: 3025(P-45)1993

❖ Trade sample Analysis report: Spentwash sample after IInd Stage Evaporation

Sl No	Parameter	Unit		Re	Test method		
			1	2	3	4	
			24.11.21	17.12.21	12.01.22	24.03.22	
1	pH		3.35	2.62	2.64	2.11	IS: 3025(P-11)1983
2	COD	mg/lit	298754	450821	446284	218342	IS: 3025(P-58) 2006
3	BOD	mg/lit	124610	187370	183730	92580	IS: 3025(P-44)1993
4	Total solids	mg/lit	355920	395190	398910	275310	APHA 22 nd edition2012,2540 B
5	Total Volatile solids	mg/lit	194370	209520	208290	163570	APHA 22 nd edition2012, 240- E,G
6.	Total Inorganic solids	mg/lit	161550	185670	190620	111740	APHA 22 nd edition2012, 2540 C
7.	Chlorides	mg/lit	23752	28507	26705	13835	IS: 3025(P-32)1988
8.	Sulphate	mg/lit	16410	19210	18384	9718	IS: 3025(P-24)1986
9.	Potash	mg/lit	26500	29700	27490		IS: 3025(P-45)1993

***** Spentless:

Sl No	Parameter	Unit	Result			Test method
			1	2	3	
			12.01.22	11.02.22	24.03.22	
1	pH		1.67	2.69	2.73	IS: 3025(P-11)1983
2	COD	mg/lit	147	390	290	IS: 3025(P-58) 2006
3	BOD (3 days @27deg C)	mg/lit	56	120	102	IS: 3025(P-44)1993
4	Total disolved solids	mg/lit	113	110	105	IS: 3025(P-16)1984
5	Total suspended solids	mg/lit	<4	ND	ND	IS: 3025(P-17)1984

7.	Chlorides as CL	mg/lit	18	15	23	IS: 3025(P-32)1988
8.	Sulphates as SO ₄	mg/lit	10	8	9	IS: 3025(P-24)1986
9.	Oil & Grease	mg/lit	ND	ND	ND	IS: 3025(P-39)1991 (RA 2003)

❖ Trade sample Analysis report: Integrated MEE Process Condensate

Sl No	Parameter	Unit		Result		Test method
			1	2	3	
			12.01.22	11.02.22	24.03.22	
1	pH		1.35	3.80	2.31	IS: 3025(P-11)1983
2	COD	mg/lit	1698	3546	2576	IS: 3025(P-58) 2006
3	BOD	mg/lit	744	1570	1140	IS: 3025(P-44)1993
4	Total disolved solids	mg/lit	230	210	215	IS: 3025(P-16)1984
5	Total suspended solids	mg/lit	12	15	10	IS: 3025(P-17)1984
7.	Chlorides as CL	mg/lit	32	38	54	IS: 3025(P-32)1988
8.	Sulphates as SO ₄	mg/lit	12	12	11	IS: 3025(P-24)1986
9.	Oil & Grease	mg/lit	ND	ND	ND	IS: 3025(P-39)1991 (RA 2003)

❖ Trade sample Analysis report: Ist Stage MEE Process Condensate

Sl No	Parameter	Unit		Result		Test method
			1	2	3	
			12.01.22	11.02.22	24.03.22	
1	pН		1.35	3.80	2.31	IS: 3025(P-11)1983
2	COD	mg/lit	1698	3546	2576	IS: 3025(P-58) 2006
3	BOD	mg/lit	744	1570	1140	IS: 3025(P-44)1993
4	Total disolved solids	mg/lit	230	210	215	IS: 3025(P-16)1984
5	Total suspended solids	mg/lit	12	15	10	IS: 3025(P-17)1984
7.	Chlorides as CL	mg/lit	32	38	54	IS: 3025(P-32)1988
8.	Sulphates as SO ₄	mg/lit	12	12	11	IS: 3025(P-24)1986
9.	Oil & Grease	mg/lit	ND	ND	ND	IS: 3025(P-39)1991 (RA 2003)

❖ Trade sample Analysis report: IInd Stage MEE Process Condensate

Sl No	Parameter	Unit	Result		Test method
			1	2	
			24.11.21	24.03.22	
1	рН		1.75	2.05	IS: 3025(P-11)1983
2	COD	mg/lit	7889	5425	IS: 3025(P-58) 2006
3	BOD	mg/lit	3340	2090	IS: 3025(P-44)1993
4	Total disolved solids	mg/lit	290	260	IS: 3025(P-16)1984
5	Total suspended solids	mg/lit	15	10	IS: 3025(P-17)1984
7.	Chlorides as CL	mg/lit	142	89	IS: 3025(P-32)1988
8.	Sulphates as SO ₄	mg/lit	70	34	IS: 3025(P-24)1986
9.	Oil & Grease	mg/lit	ND	ND	IS: 3025(P-39)1991 (RA 2003)

❖ Condensate polishing Unit (BTP)

Sl No	Parameter	Unit	Result		Test method
			Inlet	Outlet	
			24.1	1.21	
1	рН		3.03	7.92	IS: 3025(P-11)1983
2	COD	mg/lit	415	58	IS: 3025(P-58) 2006
3	BOD (3 days @27deg C)	mg/lit	170	14	IS: 3025(P-44)1993
4	Total disolved solids	mg/lit	810	290	IS: 3025(P-16)1984
5	Total suspended solids	mg/lit	90	24	IS: 3025(P-17)1984
7.	Chlorides as CL	mg/lit	240	85	IS: 3025(P-32)1988
8.	Sulphates as SO ₄	mg/lit	102	90	IS: 3025(P-24)1986
9.	Oil & Grease	mg/lit	ND	ND	IS: 3025(P-39)1991 (RA 2003)

Sl No	Parameter	Unit	Result		Test method
			Inlet	Outlet	
			17.1	2.21	
1	pН		2.64	7.04	IS: 3025(P-11)1983
2	COD	mg/lit	725	24	IS: 3025(P-58) 2006
3	BOD (3 days @27deg C)	mg/lit	310	<4	IS: 3025(P-44)1993
4	Total disolved solids	mg/lit	370	170	IS: 3025(P-16)1984
5	Total suspended solids	mg/lit	50	10	IS: 3025(P-17)1984
7.	Chlorides as CL	mg/lit	62	18	IS: 3025(P-32)1988
8.	Sulphates as SO ₄	mg/lit	21	7	IS: 3025(P-24)1986
9.	Oil & Grease	mg/lit	ND	ND	IS: 3025(P-39)1991 (RA 2003)

Sl No	Parameter	Unit	Result		Test method
			Inlet	Outlet	
			12.01	.2022	
1	рН		2.82	7.14	IS: 3025(P-11)1983
2	COD	mg/lit	786	28	IS: 3025(P-58) 2006
3	BOD (3 days @27deg C)	mg/lit	324	<4	IS: 3025(P-44)1993
4	Total disolved solids	mg/lit	348	154	IS: 3025(P-16)1984
5	Total suspended solids	mg/lit	54	8	IS: 3025(P-17)1984
7.	Chlorides as CL	mg/lit	72	12	IS: 3025(P-32)1988
8.	Sulphates as SO ₄	mg/lit	26	6	IS: 3025(P-24)1986
9.	Oil & Grease	mg/lit	ND	ND	IS: 3025(P-39)1991 (RA 2003)

❖ Borewell Analysis report: Date of Sampling: 24.11.2021

Sl No	Test parameter	Unit	Kiaar LAB Bisnal	P R Wali Bisnal	H S Banaj Bisnal	Test Method
			1	2	3	
1	Color	Hazen	<5	<5	<5	IS: 3025(P-04)1983
2	Odor		Agreeable	Agreeable	Agreeable	IS: 3025(P-05) 1983
3	рН		7.52	7.65	7.33	IS: 3025(P-11)1983
4	Turbidity	NTU	0.1	1.1	0.6	IS: 3025(P-10)1984
5	Total Alkalinity	mg/lit	170	190	184	IS: 3025(P-23) 1986
6	COD	mg/lit	25	28	26	IS: 3025(P-58) 2006
7	BOD(3days @270 C	mg/lit	<4	<4	<4	IS: 3025(P-44)1993
8	TDS	mg/lit	490	560	540	IS: 3025(P-16) 1984
9	Chlorides	mg/lit	102	115	138	IS: 3025(P-32)1988
10	Hardness	mg/lit	280	430	476	IS: 3025(P-21)1983
11	Calcium	mg/lit	76	126	130	IS: 3025(P-40) 1991
12	Magnesium	mg/lit	22	28	37	IS: 3025(P-46)1994
13	Sodium	mg/lit	59.7	76.2	102.8	IS: 3025(P-45) 1993
14	Potassium	mg/lit	3.5	4.5	4.3	IS: 3025(P-44)1993
15	%sodium	%	31.32	27.56	31.67	By calculation
16	SAR		1.55	1.59	2.04	By calculation
17	RSC	meq/l	-2.23	-4.83	-5.9	By calculation
18	EC	μmhos/cm	870	960	960	IS: 3025(P-14)1984

❖ Borewell Analysis report: Date of Sampling: 24.11.2021

Sl No	Test parameter	Unit	S B Banaj Bisnal	S P Maygur Bisnal	S. P. Naik Bisnal	Test Method
			4	5	6	
1	Color	Hazen	<5	<5	<5	IS: 3025(P-04)1983
2	Odor		Agreeable	Agreeable	Agreeable	IS: 3025(P-05) 1983
3	рН		7.73	7.46	7.92	IS: 3025(P-11)1983
4	Turbidity	NTU	0.2	0.5	0.8	IS: 3025(P-10)1984
5	Total Alkalinity	mg/lit	210	192	220	IS: 3025(P-23) 1986
6	COD	mg/lit	29	27	28	IS: 3025(P-58) 2006
7	BOD(3days @270 C	mg/lit	<4	<4	<4	IS: 3025(P-44)1993
8	TDS	mg/lit	570	550	590	IS: 3025(P-16) 1984
9	Chlorides	mg/lit	144	129	162	IS: 3025(P-32)1988
10	Hardness	mg/lit	480	460	490	IS: 3025(P-21)1983
11	Calcium	mg/lit	134	124	138	IS: 3025(P-40) 1991
12	Magnesium	mg/lit	35	37	35	IS: 3025(P-46)1994
13	Sodium	mg/lit	107.1	102.7	126.2	IS: 3025(P-45) 1993
14	Potassium	mg/lit	4.0	4.3	4.8	IS: 3025(P-44)1993
15	%sodium	%	32.5	32.34	35.69	By calculation
16	SAR		2.12	2.07	2.48	By calculation
17	RSC	meq/l	-5.41	-5.44	-5.41	By calculation
18	EC	μmhos/cm	980	960	1030	IS: 3025(P-14)1984

❖ Borewell Analysis report: Date of Sampling: 24.11.2021

Sl No	Test parameter	Unit	H S Naik Bisnal	B G Shirol Bisnal	Test Method
			7	8	
1	Color	Hazen	<5	<5	IS: 3025(P-04)1983
2	Odor		Agreeable	Agreeable	IS: 3025(P-05) 1983
3	рН		7.80	7.62	IS: 3025(P-11)1983
4	Turbidity	NTU	0.9	1.2	IS: 3025(P-10)1984
5	Total Alkalinity	mg/lit	205	180	IS: 3025(P-23) 1986
6	COD	mg/lit	26	25	IS: 3025(P-58) 2006
7	BOD(3days @270 C	mg/lit	<4	<4	IS: 3025(P-44)1993
8	TDS	mg/lit	570	610	IS: 3025(P-16) 1984
9	Chlorides	mg/lit	140	148	IS: 3025(P-32)1988
10	Hardness	mg/lit	510	680	IS: 3025(P-21)1983
11	Calcium	mg/lit	152	216	IS: 3025(P-40) 1991
12	Magnesium	mg/lit	32	34	IS: 3025(P-46)1994
13	Sodium	mg/lit	121.9	105.8	IS: 3025(P-45) 1993
14	Potassium	mg/lit	5.3	4.3	IS: 3025(P-44)1993
15	%sodium	%	33.86	25.15	By calculation
16	SAR		2.34	1.76	By calculation
17	RSC	meq/l	-6.16	-10.03	By calculation
18	EC	μmhos/cm	1030	1120	IS: 3025(P-14)1984

❖ Borewell Analysis report: Date of Sampling: 17.12.2021

Sl No	Test parameter	Unit	G R Kulkarni Handigund	V N Bhasme Handigund	U S Chanal Handigund	Test Method
			1	2	3	
1	Color	Hazen	<5	<5	<5	IS: 3025(P-04)1983
2	Odor		Agreeable	Agreeable	Agreeable	IS: 3025(P-05) 1983
3	pH		7.51	7.56	7.29	IS: 3025(P-11)1983
4	Turbidity	NTU	2.1	1.3	2.5	IS: 3025(P-10)1984
5	Total Alkalinity	mg/lit	230	210	260	IS: 3025(P-23) 1986
6	COD	mg/lit	29	24	30	IS: 3025(P-58) 2006
7	BOD(3days @270 C	mg/lit	<4	<4	<4	IS: 3025(P-44)1993
8	TDS	mg/lit	762	740	870	IS: 3025(P-16) 1984
9	Chlorides	mg/lit	162	148	204	IS: 3025(P-32)1988
10	Hardness	mg/lit	820	794	930	IS: 3025(P-21)1983
11	Calcium	mg/lit	248	246	272	IS: 3025(P-40) 1991
12	Magnesium	mg/lit	49	44	61	IS: 3025(P-46)1994
13	Sodium	mg/lit	104.7	96.7	116.5	IS: 3025(P-45) 1993
14	Potassium	mg/lit	5.2	5.1	4.9	IS: 3025(P-44)1993
15	%sodium	%	21.58	20.78	21.3	By calculation
16	SAR		1.58	1.49	1.66	By calculation
17	RSC	meq/l	-11.88	-11.76	-13.48	By calculation
18	EC	μmhos/cm	1570	1560	1740	IS: 3025(P-14)1984

❖ Borewell Analysis report: Date of Sampling: 17.12.2021

Sl No	Test parameter	Unit	S S Kuibagi Handigund	M S Chingundi Handigund	Test Method
			4	5	
1	Color	Hazen	<5	<5	IS: 3025(P-04)1983
2	Odor		Agreeable	Agreeable	IS: 3025(P-05) 1983
3	рН		7.19	7.37	IS: 3025(P-11)1983
4	Turbidity	NTU	0.7	0.3	IS: 3025(P-10)1984
5	Total Alkalinity	mg/lit	190	170	IS: 3025(P-23) 1986
6	COD	mg/lit	28	23	IS: 3025(P-58) 2006
7	BOD(3days @270 C	mg/lit	<4	<4	IS: 3025(P-44)1993
8	TDS	mg/lit	870	460	IS: 3025(P-16) 1984
9	Chlorides	mg/lit	205	108	IS: 3025(P-32)1988
10	Hardness	mg/lit	950	554	IS: 3025(P-21)1983
11	Calcium	mg/lit	304	168	IS: 3025(P-40) 1991
12	Magnesium	mg/lit	46	33	IS: 3025(P-46)1994
13	Sodium	mg/lit	102.4	95.3	IS: 3025(P-45) 1993
14	Potassium	mg/lit	5.2	4.1	IS: 3025(P-44)1993
15	%sodium	%	18.91	27	By calculation
16	SAR		1.44	1.75	By calculation
17	RSC	meq/l	-15.23	-7.75	By calculation
18	EC	μmhos/cm	1780	780	IS: 3025(P-14)1984

❖ Borewell Analysis report: Date of Sampling: 12.01.2022

Sl No	Test parameter	Unit	B H Sanadi Kappalguddi	B R Uddapagaol Kappalguddi	M L Ajjapagaol Kappalguddi	Test Method
			1	2	3	
1	Color	Hazen	<5	<5	<5	IS: 3025(P- 04)1983
2	Odor		Agreeable	Agreeable	Agreeable	IS: 3025(P-05) 1983
3	рН		7.28	7.42	7.49	IS: 3025(P- 11)1983
4	Turbidity	NTU	1.7	0.6	1.6	IS: 3025(P- 10)1984
5	Total Alkalinity	mg/lit	408	482	389	IS: 3025(P-23) 1986
6	COD	mg/lit	31	50	40	IS: 3025(P-58) 2006
7	BOD(3days @270 C	mg/lit	< 4	6	< 4	IS: 3025(P- 44)1993
8	TDS	mg/lit	1093	1110	1360	IS: 3025(P-16) 1984
9	Chlorides	mg/lit	478	451	642	IS: 3025(P- 32)1988
10	Hardness	mg/lit	512	645	890	IS: 3025(P- 21)1983
11	Calcium	mg/lit	128	178	256	IS: 3025(P-40) 1991
12	Magnesium	mg/lit	46	48	60	IS: 3025(P- 46)1994
13	Sodium	mg/lit	112	108	128	IS: 3025(P-45) 1993
14	Potassium	mg/lit	6.2	5.9	7.9	IS: 3025(P- 44)1993
15	%sodium	%	32.22	26.56	23.70	By calculation
16	SAR		2.32	1.85	1.87	By calculation
17	RSC	meq/l	-7.63	-8.9	-13.8	By calculation
18	EC	μmhos/cm	1763	1790	2250	IS: 3025(P- 14)1984

❖ Borewell Analysis report: Date of Sampling: 12.01.2022

Sl No	Test parameter	Unit	P.K. Bhangi Kappalguddi	Near Hanuman temple Azadnagar	CBSE school Saidapur	Test Method
			4	5	6	
1	Color	Hazen	<5	<5	<5	IS: 3025(P- 04)1983
2	Odor		Agreeable	Agreeable	Agreeable	IS: 3025(P-05) 1983
3	pН		7.87	7.52	7.64	IS: 3025(P- 11)1983
4	Turbidity	NTU	0.5	0.1	0.2	IS: 3025(P- 10)1984
5	Total Alkalinity	mg/lit	256	226	146	IS: 3025(P-23) 1986
6	COD	mg/lit	22	14	12	IS: 3025(P-58) 2006
7	BOD(3days @270 C	mg/lit	< 4	<4	<4	IS: 3025(P- 44)1993
8	TDS	mg/lit	675	560	560	IS: 3025(P-16) 1984
9	Chlorides	mg/lit	204	162	158	IS: 3025(P- 32)1988
10	Hardness	mg/lit	518	443	297	IS: 3025(P- 21)1983
11	Calcium	mg/lit	154	124	62	IS: 3025(P-40) 1991
12	Magnesium	mg/lit	32	32	34	IS: 3025(P- 46)1994
13	Sodium	mg/lit	92.8	71.2	72.4	IS: 3025(P-45) 1993
14	Potassium	mg/lit	5.7	3.6	3.6	IS: 3025(P- 44)1993
15	%sodium	%	27.83	25.66	34.48	By calculation
16	SAR		1.77	1.47	1.83	By calculation
17	RSC	meq/l	-6.36	-4.86	-1.93	By calculation
18	EC	μmhos/cm	1089	903	903	IS: 3025(P- 14)1984

❖ Borewell Analysis report: Date of Sampling: 11.02.2022

SI No	Test parameter	Unit	Girish R Kulkarni Handigund	Vijay N Basme Handigund	Ulliappa S Chanal Handigund	Test Method
			1	2	3	
1	Color	Hazen	<5	<5	<5	IS: 3025(P-04)1983
2	Odor		Agreeable	Agreeable	Agreeable	IS: 3025(P-05) 1983
3	pН		7.53	7.67	7.36	IS: 3025(P-11)1983
4	Turbidity	NTU	1.9	1.1	2.2	IS: 3025(P-10)1984
5	Total Alkalinity	mg/lit	218	230	240	IS: 3025(P-23) 1986
6	COD	mg/lit	27	25	28	IS: 3025(P-58) 2006
7	BOD(3days @270 C	mg/lit	<4	<4	<4	IS: 3025(P-44)1993
8	TDS	mg/lit	754	720	850	IS: 3025(P-16) 1984
9	Chlorides	mg/lit	156	135	192	IS: 3025(P-32)1988
10	Hardness	mg/lit	790	768	880	IS: 3025(P-21)1983
11	Calcium	mg/lit	245	240	269	IS: 3025(P-40) 1991
12	Magnesium	mg/lit	43	29	51	IS: 3025(P-46)1994
13	Sodium	mg/lit	102.3	93.1	119.2	IS: 3025(P-45) 1993
14	Potassium	mg/lit	5.1	4.6	4.5	IS: 3025(P-44)1993
15	%sodium	%	21.86	21.84	22.61	By calculation
16	SAR		1.58	1.51	1.71	By calculation
17	RSC	meq/l	-11.47	-981	-12.9	By calculation
18	EC	μmhos/cm	1490	1430	1690	IS: 3025(P-14)1984

❖ Borewell Analysis report: Date of Sampling: 11.02.2022

Sl No	Test parameter	Unit	Sidhappa S Kurbagi Handigund	Mahadev S Chingundi Handigund	Test Method
			4	5	
1	Color	Hazen	<5	<5	IS: 3025(P-04)1983
2	Odor		Agreeable	Agreeable	IS: 3025(P-05) 1983
3	pН		7.28	7.53	IS: 3025(P-11)1983
4	Turbidity	NTU	1.2	0.8	IS: 3025(P-10)1984
5	Total Alkalinity	mg/lit	196	186	IS: 3025(P-23) 1986
6	COD	mg/lit	26	24	IS: 3025(P-58) 2006
7	BOD(3days @270 C	mg/lit	<4	<4	IS: 3025(P-44)1993
8	TDS	mg/lit	880	450	IS: 3025(P-16) 1984
9	Chlorides	mg/lit	204	91	IS: 3025(P-32)1988
10	Hardness	mg/lit	910	538	IS: 3025(P-21)1983
11	Calcium	mg/lit	295	162	IS: 3025(P-40) 1991
12	Magnesium	mg/lit	42	32	IS: 3025(P-46)1994
13	Sodium	mg/lit	109.3	93.7	IS: 3025(P-45) 1993
14	Potassium	mg/lit	4.8	4.3	IS: 3025(P-44)1993
15	%sodium	%	20.61	27.34	By calculation
16	SAR		1.57	1.76	By calculation
17	RSC	meq/l	-14.33	-7.04	By calculation
18	EC	μmhos/cm	1720	750	IS: 3025(P-14)1984

❖ Borewell Analysis report: Date of Sampling: 24.03.2022

Sl No	Test parameter	Unit	Ishwar Rudrappa Terdal Bisnal	Sidhappa Kallappa Biradi Bisnal	KIAAR Culture Lab Bisnal	Test Method
			1	2	3	
1	Color	Hazen	<5	<5	<5	IS: 3025(P-04)1983
2	Odor		Agreeable	Agreeable	Agreeable	IS: 3025(P-05) 1983
3	pH		7.71	7.69	7.59	IS: 3025(P-11)1983
4	Turbidity	NTU	0.2	0.5	0.2	IS: 3025(P-10)1984
5	Total Alkalinity	mg/lit	184	168	230	IS: 3025(P-23) 1986
6	COD	mg/lit	27	28	28	IS: 3025(P-58) 2006
7	BOD(3days @270 C	mg/lit	<4	<4	<4	IS: 3025(P-44)1993
8	TDS	mg/lit	480	440	430	IS: 3025(P-16) 1984
9	Chlorides	mg/lit	121	116	88	IS: 3025(P-32)1988
10	Hardness	mg/lit	310	336	482	IS: 3025(P-21)1983
11	Calcium	mg/lit	75	104	156	IS: 3025(P-40) 1991
12	Magnesium	mg/lit	30	19	22	IS: 3025(P-46)1994
13	Sodium	mg/lit	63.7	53.3	45.7	IS: 3025(P-45) 1993
14	Potassium	mg/lit	3.9	2.9	3.1	IS: 3025(P-44)1993
15	%sodium	%	30.5	25.34	17.04	By calculation
16	SAR		1.57	1.26	0.9	By calculation
17	RSC	meq/l	-2.57	-3.42	-5.03	By calculation
18	EC	μmhos/c m	890	810	750	IS: 3025(P-14)1984

❖ Borewell Analysis report: Date of Sampling: 24.03.2022

Sl No	Test parameter	Unit	Prakash Dundappa Naik Bisnal	Hanamant h Satyappa Banaj Bisnal	Shivling Basappa Banaj Bisnal	Bhimappa Gurupadappa Shirol Bisnal	Test Method
			4	5	6	7	
1	Color	Hazen	<5	<5	<5	<5	IS: 3025(P-04)1983
2	Odor		Agreeable	Agreeable	Agreeable	Agreeable	IS: 3025(P-05) 1983
3	pH		8.19	7.62	8.15	7.93	IS: 3025(P-11)1983
4	Turbidity	NTU	0.5	0.3	0.5	1.5	IS: 3025(P-10)1984
5	Total Alkalinity	mg/lit	188	190	220	205	IS: 3025(P-23) 1986
6	COD	mg/lit	25	28	31	28	IS: 3025(P-58) 2006
7	BOD(3days @270 C	mg/lit	<4	<4	<4	<4	IS: 3025(P-44)1993
8	TDS	mg/lit	460	530	580	640	IS: 3025(P-16) 1984
9	Chlorides	mg/lit	98	132	145	158	IS: 3025(P-32)1988
10	Hardness	mg/lit	320	488	496	710	IS: 3025(P-21)1983
11	Calcium	mg/lit	84	132	138	214	IS: 3025(P-40) 1991
12	Magnesium	mg/lit	27	39	37	43	IS: 3025(P-46)1994
13	Sodium	mg/lit	65.6	105.1	113.5	109.2	IS: 3025(P-45) 1993
14	Potassium	mg/lit	3.1	4.2	4.3	4.6	IS: 3025(P-44)1993
15	%sodium	%	30.52	31.57	32.9	24.88	By calculation
16	SAR		1.59	2.06	2.21	1.78	By calculation
17	RSC	meq/l	-2.69	-6.05	-5.58	-10.18	By calculation
18	EC	μmhos/cm	870	940	1030	1150	IS: 3025(P-14)1984

❖ Soil analysis report: Date of Sampling: 24.11.2021

SI No	Test parameter	Unit	P R Wali Binal	H S Banaj Bisnal	S B Banaj Bisnal	S P Maygur Bisnal	S P Naik Bisnal	Test Method
			1	2	3	4	5	
1	pН	-	7.82	8.12	8.24	7.92	8.23	PP-77 -78
2	Conductivity	mmhos/cm	0.390	0.280	0.290	0.260	0.290	PP-81 -82
3	Mineraliable Nitrogen	%	0.064	0.061	0.064	0.061	0.064	PP-89 -91
4	Available Phosphorus	Kg/ha	55	53	54	52	57	PP-96 -98
5	Available Potassium	Kg/ha	450	540	610	590	530	PP-99 -100
6	Organic carbon	%	0.68	0.65	0.62	0.65	0.68	PP-84 -85
7	Calcium (as Ca)	%	2.19	2.35	2.29	2.35	2.21	PP-103 -104
8	Magnesium(as Mg)	%	0.04	0.029	0.021	0.026	0.019	PP-104 -105

Sl No	Test parameter	Unit	H S Naik Bisnal	B G Shirol Bisnal	Test Method
			6	7	
1	pН	-	8.16	8.09	PP-77 -78
2	Conductivity	mmhos/cm	0.270	0.320	PP-81 -82
3	Mineraliable Nitrogen	%	0.063	0.065	PP-89 -91
4	Available Phosphorus	Kg/ha	55	58	PP-96 -98
5	Available Potassium	Kg/ha	510	390	PP-99 -100
6	Organic carbon	%	0.64	0.67	PP-84 -85
7	Calcium (as Ca)	%	2.26	2.35	PP-103 -104
8	Magnesium(as Mg)	%	0.022	0.028	PP-104 -105

❖ Soil analysis report: Date of Sampling: 17.12.2021

Sl No	Test parameter	Unit	Girish Kulkarni	Vijay Bhasme	Ulleppa Chanal	Sidappa Kurbagi	Mahadev Chingundi	Test Method
			1	2	3	4	5	
1	рН	-	7.82	7.89	7.92	8.03	8.13	PP-77 -78
2	Conductivity	mmhos/cm	0.370	0.360	0.410	0.340	0.280	PP-81 -82
3	Mineraliable Nitrogen	%	0.062	0.062	0.068	0.062	0.061	PP-89 -91
4	Available Phosphorus	Kg/ha	55	53	56	55	52	PP-96 -98
5	Available Potassium	Kg/ha	410	570	370	470	510	PP-99 -100
6	Organic carbon	%	0.64	0.61	0.68	0.63	0.63	PP-84 -85
7	Calcium (as Ca)	%	2.73	2.71	2.88	2.68	2.39	PP-103 - 104
8	Magnesium (as Mg)	%	0.26	0.23	0.21	0.24	0.18	PP-104 - 105

❖ Boiler Ash analysis report:

Sl No	Parameter	Unit	Result	
			24.11.21	17.12.2021
1	Moisture	%	0.64	0.69
2	pH(Saturated)		11.6	11.2
3	Total Volatile Solids	%	1.44	1.53
4	Residual ash	%	98.56	98.47
5	Nitrogen	%	1.03	1.03
6	Phosphorus as P2O5	%	1.38	1.35
7	Potassium as K2O	%	13.9	9.3
8	Organic carbon	%	5.7	3.7

❖ Pressmud Analysis:

Sl No	Parameter	Unit	R	esult
			24.11.21	17.12.2021
1	Moisture	%	63.71	55.07
2	pH(Saturated)		5.31	4.35
3	Total Volatile Solids	%	84.29	52.12
4	Residual ash	%	15.71	47.88
5	Nitrogen	%	1.16	1.88
6	Phosphorus as P2O5	%	1.07	1.50
7	Potassium as K2O	%	0.81	0.39
8	Organic carbon	%	46.2	43.74

❖ Yeast Sludge Analysis .

Sl No	Parameter	Unit	Result
			17.12.2021
1	Moisture	%	54.37
2	pH(Saturated)		4.69
3	Total Volatile Solids	%	81.53
4	Residual ash	%	18.47
5	Nitrogen	%	1.03
6	Phosphorus as P2O5	%	1.12
7	Potassium as K2O	%	3.72
8	Organic carbon	%	5.9

❖ Biocompost Analysis Report :

Sl No	Parameter	Unit	Result	
			17.01.22	24.03.22
1	Moisture	%	24.21	30.25
2	pH(Saturated)		6.60	6.59
3	Total Volatile Solids	%	64.02	62.47
4	Residual ash	%	35.98	37.53
5	Nitrogen	%	1.74	1.69
6	Phosphorus as P2O5	%	1.73	1.85
7	Potassium as K2O	%	3.53	3.34
8	Organic carbon	%	27.04	28.13
9	C/N		15.54	16.64
	Leachate water	Analysis		
10	pН		7.83	7.56
11	COD	mg/lit	218	223
12	BOD	mg/lit	23	25
13	Chlorides	mg/lit	162	141
14	EC	μMhos/cm	1421	1410

LED based lighting system









Exhibit-13

Rain water harvesting ponds







Onsite Emergency Plan



ON-SITE EMERGENCY PLAN

FOR

GODAVARI BIOREFINERIES LTD



GBL/OEP/Distillery/2020

Revision No.: 7

Revision date: 12.3.2020

DOCUMENT RELEASE AUTHORIZATION

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Approved by DIRECTOR (W) :(B.R.Bakshi)
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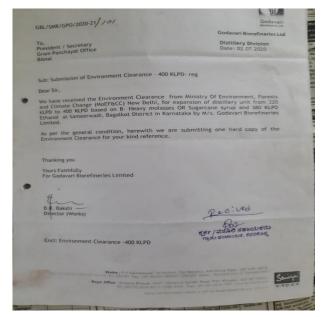
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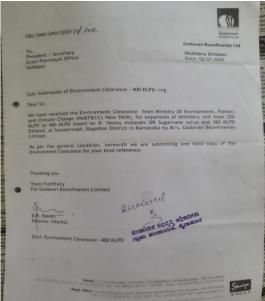
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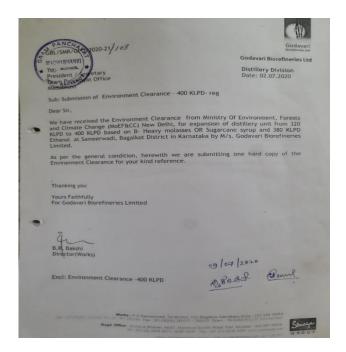
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EC Accordance Information letter submitted to Gram Panchayats







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