O/C

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

MSEZL/MNG/EC/COMP/2019-20

31 Dec, 2020

To,

The Director,
Southern Region, Regional Office,
Ministry of Environment and Forests,
Kendriya Sadan, 4th Floor, E&F Wings,
17th Main Road, 1st Block, Koramangala,
Bangalore – 560 034

Regional Office
Karnataka State Pollution Control Board
Plot No.10-'B'
Baikampady Industrial Area,
Mangaluru-575011
4/1/21

Sir,

Sub: Six monthly Compliance Report.

Ref:

1. Environmental Clearance No: 21-383/2007-IA-III, dated 3rd April 2008.
2. Amendment to Environmental Clearance for setting up of Phase-I of Special Economic Zone at Mangalore by M/s Mangalore SEZ Ltd – regarding No: 21-383/2007-IA-III dated 13th July, 2012.
3. Amendment to Environmental Clearance for setting up of Phase-I of Special Economic Zone at Mangalore by M/s Mangalore SEZ Ltd date 27 Aug 2014.
4. Amendment to Environmental Clearance for development of Multi Product Units as Mangalore SEZ dated 18 June 2015.

With reference to above, we would like to submit the compliance report as on date.

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
(i)	No Objection Certificate from the Karnataka State Pollution Control Board shall be obtained before initiating the project.	Consent For Establishment from KSPCB obtained on 30 April 2008 and Extension of validity of Consent For Establishment obtained on 27 May 2013 and the copy was submitted to MoEF.
(ii)	The MSEZ project shall be restricted to the Phase-I of the project, proposed over 1,800 acres. The phase II of the project shall be considered by Ministry of Environment and Forests only after	Complied. MSEZL will approach MoEF with requisite documents as per EIA Notification, 2006 for Phase-2 expansions if taken in future.

Sy.No 168/3A, Plot No U-1, Administrative Building, Mangalore Special Economic Zone, Bajpe Village, Mangalore taluk, Website: www.mangaloresez.com

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
	receipt of all requisite documents/information as laid down in the Environmental Impact Assessment Notification, 2006 and Coastal Regulation Zone Notification, 1991 as applicable.	
(iii)	All development in the Coastal Regulation Zone area shall be in accordance with the Coastal Regulation Zone Notification, 1991. No destruction of mangroves shall be undertaken except while undertaking the permissible activities in the Coastal Regulation Zone-I areas.	Complied.
(iv)	The project proponent shall not take up any activity in 875 acres of Coastal Regulation Zone land, other than those permissible under the Coastal Regulation Zone Notification 1991 such as pipeline corridors, pipelines roads on stilts.	Complied.
(v)	With regard to the containing the suspected contamination of the groundwater near Athurkodi area of Kuthethoor village, MRPL have given an undertaking vide their letter dated 19.3.2008 which is as follows:- a) Implementation of recommendation of NGPRI will be started by MRPL immediately after submission of their report. b) Depending upon the nature of their recommendations, we will make efforts to complete necessary actions within 6 months from the date of receipt of their report. c) In addition to above, a daily vigil is already in place to take samples from different places and to monitor any suspected oil leakage. This will continue till the problem is resolved. d) We are also in continuous contact with the residents in the surround areas with regard to any contamination. KSPCB and MRPL shall ensure that (a) to (d)	This condition pertains to MRPL phase III expansion project. MRPL phase III expansion has been detached from MSEZ phase I project vide EC amendment dated 13th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.

Sy.No 168/3A, Plot No U-1, Administrative Building, Mangalore Special Economic Zone, Bajpe Village, Mangalore taluk, Website: www.mangaloresez.com

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
	above is implemented in a time bound manner and a monthly report on the progress of the activities provided to the Regional Office of this Ministry at Bangalore. For this purpose a separate budget would be allocated by MRPL.	
(vi)	The project proponent shall obtain a report from the Wildlife Department with regard to existence of wildlife in the proposed site as claimed by the public before implementing the project.	Report from the chief conservator of Forest regarding existence of wildlife in the proposed site was submitted to the MoEF dated June 5, 2008.
(vii)	The R&R package shall be strictly in accordance with the laid down norms of the State Government.	The R&R Package is being implemented strictly as per approved policy by State Government. In 1st PDF **1246** families out of **1253**, In 2nd PDF **214** families out of **214**, In 3rd PDF **146** families out of **147** families & **14** shops has been compensated with R&R Packages. Totally **1620** families have vacated their houses and are rehabilited.
(viii)	A marine Environment Impact Assessment and Risk Assessment along with the Disaster Management Plan shall be prepared for the outfall facilities proposed in the Coastal Regulation Zone and the marine areas.	NIO has carried out EIA, Risk Assessment, DMP and Bathymetry survey along with Marine Outfall pipeline alignment. The detailed design report of the Marine Outfall facility is prepared by Master planning consultants of MSEZ under the guidance of Department of Oceanography, IIT Chennai. The design report was also vetted by NIO, Goa. The detailed project report of the facility is submitted to MoEF during November 2009. MSEZ has taken up the implementation of the above facility and completed the work by July 2014. MSEZ obtained consent for operation of treated waste water

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
		discharge line from KSPCB vide dated 9 Sep 2014, 8 Oct 2015 & 27 Aug 2016.
(ix)	Project proponent shall put up a dedicated website and a display panel to inform the public regarding the Ambient Air Quality along with SO_2 NOx and other parameters as prescribed as Central Pollution Control Board (CPCB).	MSEZL has dedicated website 'www.msezl.com', wherein Environment Monitoring Parameters are periodically uploaded and made available to the public. Installation and commissioning of Continuous Ambient Air Quality Monitoring station (CAAQMS) has been completed during the month July 2017 and presently data is being transferred to CPCB server continuously. The location of monitoring station is finalized in consultation with KSPCB.
(x)	The gaseous emissions (SO2, NOx, HC, VOC and Benzene) from various process units shall conform to the standards prescribed by the concerned State Pollution Control Board. All the measures detailed in the EMP and response to the Public Hearing shall be taken to control the point/stack and fugitive gaseous emissions from the proposed facilities, processes and storage units etc., for ensuring that the ambient air quality around the Refinery due to the expansion is maintained at the predicted 24 hourly average maximum concentration.	Noted. The existing units in MSEZ are complying the conditions and submitting reports to KSPCB directly. MRPL phase III expansion has been detached from MSEZ phase I project vide EC amendment dated 13th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.
(xi)	The emission levels of the other pollutants shall also remain within the permissible levels	Noted.
(xii)	The industrial units in the SEZ and the associated facilities shall be strictly in accordance with the norms laid down by the Karnataka State Government and CPCB.	Noted and will be adhered.
(xiii)	The project proponent shall ensure that the greenery of the area is maintained. Further, 33% of the project area shall be dedicated for green belt development of which at least 5% shall be	Presently MSEZL has completed Green Belt development in 272 acres out of 272 acres by planting 122400 saplings. Green Belt

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
	for mangrove afforestation. The local Forest Department shall be associated for this purpose and requisite budget earmarked.	operation & maintenance is for 2-3 years & plants are maintained as per the good practises to ensure 100% survival. Slope stabilisation in about 18 acres with vetiver grass has been completed.
(xiv)	The project proponent shall ensure that the water requirement of the Mangalore city does not get affected due to the SEZ operation. Adequate provision shall be made in the reservoirs to provide for the water requirement of the cities.	Noted.
(xv)	The project proponent shall ensure that during construction and operation of the project the traffic in the city is not affected.	Complied.
(xvi)	All precautions of the highest standards shall be incorporated in the design of the project to ensure that there is no chance of emission/leakage of hazardous chemicals including Benzene. Detailed monitoring programme shall be designed and the information provided to the public through display and dedicated website by means of online monitoring.	Noted and will be complied.
(xvii)	Low Sulphur internal fuel oil and fuel gas shall be fired in process heaters and boilers.	Noted and will be complied.
(xviii)	Quarterly monitoring of fugitive emissions shall be carried out by Fugitive Emission Detectors (GMI Leak Surveyor). Guidelines of CPCB will be followed for monitoring fugitive emissions. For control of fugitive emissions, all unsaturated hydrocarbons shall be routed to the flare system. The flare system shall be designed for smokeless burning. Flare Gas Recovery System shall be installed for reduction of Hydrocarbon loss and emission of VOCs, NOx, N_2O, SOx & CO_2 to the environment.	Noted and will be complied.
(xix)	Regular Ambient Air Quality Monitoring shall be carried out. The location and results of existing	Ambient Air Quality Monitoring is being carried out regularly in three

Sy.No 168/3A, Plot No U-1, Administrative Building, Mangalore Special Economic Zone, Bajpe Village, Mangalore taluk, Website: www.mangaloresez.com

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
	monitoring stations shall be reviewed in consultation with the concerned State Pollution Control Board based on the occurrence of maximum ground level concentration and downwind direction of wind. Additional Stations shall be set up, if required. It shall be ensured that at least one monitoring station is set up in up-wind & in down-wind direction along with those in other directions.	locations and the locations of monitoring are selected in consultation with KSPCB. The reports of monitored data attached as **Annexure-I.**
(xx)	On-line data for air emissions shall be transferred to the CPCB and SPCB regularly. The instruments used for ambient air quality monitoring shall be calibrated regularly. The monitoring protocol shall ensure continuous monitoring of all the parameters.	Installation and commissioning of Continuous Ambient Air Quality Monitoring station (CAAQMS) has been completed during the month July 2017 and presently data is being transferred to CPCB server continuously. The location of monitoring station is finalized in consultation with KSPCB.
(xxi)	The practice of acoustic plant design shall be adopted to limit noise exposure for personnel to an 8 hr time weighted average of 90 dB (A).	Noted and will be complied.
(xxii)	All the pumps and other equipment's, where there is a likelihood of HC leakages, shall be provided with appropriate indicators and detectors. Provision for immediate isolation of such equipment, in case of a leakage shall also be made. The company shall adopt Leak Detection And Repair (LDAR) programme for quantification and control of fugitive emissions.	Noted and will be complied.
(xxiii)	The product loading gantry shall be connected to the product sphere in closed circuit through the vapour arm connected to the tanker. Data on fugitive emissions shall be regularly monitored and records shall be maintained	Noted and will be complied.
(xxiv)	The company shall ensure that no halogenated organic is sent to the flares. If any of the halogenated organic are present, then the respective streams may be incinerated, if there are no technically feasible or economically	Noted and will be complied.

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
	viable reduction/recovery options. Any stream containing organic carbon, other than halogenated shall be connected to proper flaring system, if not to a recovery device or an incinerator.	
(xxv)	The new standards/norms that are being proposed by the CPCB for Petrochemical Plants and Refineries shall be applicable for the proposed expansion unit. The company shall conform to the process vent standards for organic chemicals including non-VOCs and all possible VOCs i.e., TOCs standards and process vent standards for top priority chemicals. Regular monitoring will be carried out for VOC and HC and On-line monitors for VOC measurements may be installed.	The individual units complying the conditions and submitting the reports to KSPCB directly.
(xxvi)	Regular monitoring of relevant parameters for the underground water in the surrounding areas shall be undertaken and the results shall be submitted to the relevant States Pollution Control Board.	Regular monitoring of ground water is being carried out in 10 locations & the reports are attached as **Annexure-I**. The locations are finalized in consultation with KSPCB.
(xxvii)	Solid waste generated as Pretreater and Reformer Catalysts, Sulphur guard absorbent and Alumina Balls shall be disposed off as per the authorization from the State Pollution Control Board.	Noted and will be complied. Each individual unit obtaining separate approval for disposal of solid waste generated from their unit.
(xxviii)	Oily sludge shall be sent to melting pit treatment for recovery of oil. The recovered oil shall be recycled into the refinery system. The residual sludge will be stored in HDPE lined pit for disposal after treatment. The sludge shall be incinerated in the premises only.	The individual units complying the conditions and submitting the reports to KSPCB directly.
(xxix)	The company shall strictly follow all the recommendations mentioned in the Charter on Corporate Responsibility for Environmental Protection (CREP).	Noted and will be complied.
(xxx)	The Company shall harvest surface as well as rainwater from the rooftops of the buildings proposed in the expansion project and storm	Noted and will be complied.

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
	water drains to recharge the ground water and use the same water for the various activities of the project to conserve fresh water.	
(xxxi)	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	Being Complied.
(xxxii)	The Company shall implement all the recommendations made in the Environmental Impact Assessment /EMP report and risk assessment report.	MSEZL has implemented most of the recommendations of EIA/EMP report and still some of the projects of MSEZL as per EIA/EMP recommendations are under way.
(xxxiii)	The company will undertake all relevant measures, as indicated during the Public Hearing for improving the Socio-economic conditions of the surrounding area.	MSEZL is undertaking all relevant measures for improving the Socio-economic condition of the surrounding area as indicated during the Public Hearing.
(xxxiv)	With regard to R&R colony the project proponent shall obtain all requisite clearances as prescribed by the concerned agencies.	The R&R Colonies are developed after obtaining the requisite clearances from the concerned Departments like MoEF, KSPCB, Mangalore Urban Development Authority etc.

S. No	B. GENERAL CONDITIONS	Compliance
(i)	The project authorities shall strictly adhere to the stipulations made by the concerned State Pollution Control Board (SPCB) and the State Government.	Noted and will be complied.
(ii)	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	MSEZ obtained amendment to EC 1. Dated 13 July 2012 2. 27 Aug 2014, this involves widening of existing public road towards river side adjacent to MSEZ pipeline cum road Corridor in Reach-II area. 3. 18th June 2015 for development of Multi Product

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

S. No	B. GENERAL CONDITIONS	Compliance
		Units at Mangalore SEZ. Copies of amendments are submitted.
(iii)	At no time, the emissions shall be allowed to go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the units, the respective unit should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved.	Noted and will be complied.
(iv)	Adequate number of influent and effluent quality monitoring stations shall be set up in consultation with the SPCB. Regular monitoring shall be carried out for relevant parameters for both surface and ground water.	The treated effluent parameters are measured through online measuring instruments installed at outlet line of Marine outfall pump house for the parameters like pH, DO, COD, TSS, and Conductivity. Further Ground water and surface water monitoring is carried out in the surrounding areas regularly & the reports are attached as **Annexure-I.** The locations are finalized in consultation with KSPCB.
(v)	Industrial wastewater shall be properly collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	Noted and will be complied.
(vi)	The overall noise levels in and around the plant area shall be limited within the prescribed standards (85dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75dBA (day time) and 70dBA (night time).	Noted and will be complied.
(vii)	The project authorities shall strictly comply with the provisions made in Manufacture, Storage	Noted and will be complied.

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

S. No	B. GENERAL CONDITIONS	Compliance
	and Import of Hazardous Chemicals Rules 1989 as amended in 2000 for handling of hazardous chemicals etc. Necessary approvals from Chief Controller of Explosives must be obtained before commission of the expansion project. Requisite On-site and Off-site Disaster Management Plans will be prepared and implemented.	MRPL phase III expansion has been detached From MSEZ phase I project vide EC amendment dated 13th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.
(viii)	Authorization from the State Pollution Control Board must be obtained for collections/treatment/storage/ disposal of hazardous wastes.	Noted and will be complied.
(ix)	The project authorities shall provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes.	Noted and will be complied.
(x)	The stipulated conditions shall be monitored by the concerned Regional Office of this Ministry/Central Pollution Control Board/State Pollution Control Board. A six monthly compliance report and the monitored data shall be submitted to them regularly. It shall also be displayed on the Website of the Company.	Compliance report is being submitted to MoEF/KSPCB on regular basis for every six months along with Ambient Air Quality monitoring report, Noise monitoring report & Ground water monitoring report. Compliance report is also displayed in the Company website.
(xi)	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 State Pollution Control Board/ Committee and may also be seen at Website of the Ministry of Environment and Forests at http://www.envfor.nic.in. This should be 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 one shall be in the vernacular	The information regarding the EC has been published in the news papers and same was submitted to Ministry and KSPCB.

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

S. No	B. GENERAL CONDITIONS	Compliance
	language of the locality concerned and a copy of the same should be forwarded to the concerned Regional office of this Ministry.	
(xii)	The date of Financial Closure and final approval of the project by the concerned authorities and the date of commencing the land development work as well as the commissioning of the project shall be informed to the Ministry and its Regional Office.	MSEZL has taken up the land development & infrastructure works from April 2011. MSEZL Board has approved the Business Plan for Infrastructure Development during Aug. 2012.
(xiii)	Proper Housekeeping and adequate occupational health programmes shall be taken up. Regular Occupational Health Surveillance Programme for the relevant diseases shall be carried out and the records shall be maintained properly for at least 30-40 years. Sufficient preventive measures shall be adopted to avoid direct exposure to emission and other Hydrocarbons etc.	Noted and will be complied.
(xiv)	A separate environment management cell with full fledge laboratory facilities to carry out various management and monitoring functions shall be set up under the control of a Senior Executive.	Sr. General Manager (Environment & Civil) & Sr. Environmental Engineer are in place to take care of Environmental issues. Horticulture Dy. General Manager is appointed for development and maintenance of Green belt.

S. No	EC Amendment conditions dtd. 13th July 2012	Compliance
(i)	Only the sector Specific shall be permitted in the SEZ & those units shall obtain separate Environmental Clearance as applicable.	MSEZL obtained amendment to EC for development of Multi Product units as Mangalore SEZ dated 18th June 2015.
(ii)	Proponent shall enhance the allocation for the CSR activities from 2.5 to 5 % of the total cost & item-wise details along with time bound action plan shall be prepared & submitted to the Ministry's Regional office at Bangalore. Implementation of such program shall be ensured accordingly in a time bound manner.	MSEZL has already taken up CSR activities as per CSR guidelines.

Sy.No 168/3A, Plot No U-1, Administrative Building, Mangalore Special Economic Zone, Bajpe Village, Mangalore taluk, Website: www.mangaloresez.com

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

S. No	EC Amendment conditions dtd. 13th July 2012	Compliance
(iii)	The green belt shall be 33% all along the periphery & width of the green belt shall be minimum 50 mts.	Noted and will be complied.

S. No	EC Amendment conditions dtd. 27th Sep 2014	Compliance
(i)	The project proponent while carrying out the road widening works towards river side should not cause any impact to the river water flow and should be clear of river water way.	Complied.
(ii)	The project proponent to take up the bank protection works like stone pitching etc to avoid soil erosion of the banks.	River bank protection works as directed by WRDO are carried out.
(iii)	The project proponent to take up all adequate measures to mitigate the dust pollution during the road widening works.	Complied.
(iv)	The proponent shall not dump any construction wastes etc in the river portion.	Complied.

With Regards

Eta Sreenivasulu

Sr. General Manager

Mangalore SEZ Ltd.

Encl.:

1. Monitoring reports for Air, Water & Noise Environment.
2. Environmental compliance report & Environmental Monitoring Reports from OMPL.

Copy to: Environmental Officer, Karnataka State Pollution Control Board, Mangalore.

o/c

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-1
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

MSEZL/MNG/R&R/COMP/2019-20

31 Dec, 2020

To,

The Director,
Southern Region, Regional Office,
Ministry of Environment and Forests,
Kendriya Sadan, 4th Floor, E&F Wings,
17th Main Road, Ist Block, Koramangala,
Bangalore – 560 034

Regional Office
Karnataka State Pollution Control Board
Plot No.10-'B',
Baikampady Industrial Area,
Mangaluru-575011.
4/1/21

Sir,

Sub: Development of Residential Colony for Rehabilitation and Resettlement for SEZ Complex at Kulai & Thokur village, Mangalore Taluk & District by M/s Mangalore SEZ Limited, Mangalore.

Ref: 1) Environmental Clearance No: SEIAA: 140: CON: 2008, dated 25th June 2008.

With reference to above, we would like to submit the compliance report as on date

	A. SPECIFIC CONDITIONS	
	I. CONSTRUCTION PHASE	
(i)	Setup an Environment Management cell and ensure that the cell manages/maintains all the environmental aspects such as sewage treatment, solid waste disposal, maintenance of green belt areas etc, and in case the commercial space is sold/leased, then enter into agreement as per the draft agreement copy submitted, with the prospective buyers to ensure that they maintain the cell and take care of all environment concerns during the operation phase of the project. In addition sufficient fees should be levied so as to raise a corpus fund to maintain the Environment Cell.	MSEZL Environment Management cell is established to look after the environmental aspects like sewage treatment, Solid waste disposal & Development and maintenance of Green belt etc. The conditions specified regarding selling or leasing of Commercial space in R&R colony will be complied in case of selling /leasing of land is taken up.
(ii)	Appoint an Environment and Safety Engineer during the construction phase to take care of environment and safety aspects as committed.	Yes. Sr. Environmental Engineer and Sr. General Manager (Environment & Civil) are in place to take care of

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-1
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

		Environmental issues and Safety aspects. Horticulture Dy. General Manager has appointed for development and maintenance of Green belt.
(iii)	All required sanitary and hygienic measures should be in place before starting construction activities and to be maintained throughout the construction phase. Sufficient number of toilets/bathrooms should be provided with required septic tanks and soak pits for construction work force.	Complied.
(iv)	A First Aid Room should be provided in the project both during construction and operation of the project.	A Doctor, clinic and Medical shop is established at 48 acres R&R colony to look after the Project Rehabilitated People. MSEZL has taken up with GoK for setting up Primary Health centre and agreed to provide land for the setting up the same.
(v)	Adequate drinking water and sanitary facilities should be provided for construction workers at the site. The safe disposal of waste water and solid wastes generated during the construction phase should be ensured.	Works are completed.
(vi)	Provision should be made for the supply of fuel (kerosene or cooking gas) utensils such as pressure cookers etc, to the labourers during the construction phase.	Works are completed.
(vii)	All the labourers to be engaged for construction should be screened for health and adequately treated before engaging them to work at the site and detailed report submitted to SEIAA. Safety standards as per National Building Code (NBC) should be ensured.	Works are completed.
(viii)	For disinfection of waste water meant for uses other than toilet flushing, use ultra violet radiation and not chlorination. For recirculation of treated waste water for toilet flushing, use chlorination.	Works are completed.
(ix)	All the top soil excavated during construction activities should be stored for use in	Works are completed.

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-1
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

	horticulture/Landscape development within the Project site.	
(x)	Disposal of construction waste during construction phase should not create any adverse effect on the neighbouring communities and be disposed taking the necessary precautions for general safety and health aspects of people, only in approved sites with the approval of competent authority.	Works are completed.
(xi)	Soil and ground water samples should be tested at the project site during the construction phase to ascertain that there is no threat to ground water quality by leaching of heavy metals and or other toxic contaminants and report submitted to SEIAA.	The project is for development of R&R Colony and the scope of works is to develop the graded sites to Project displaced families with water and sanitation facilities. There are no chances of heavy metals or toxic contaminants produced from the activity. However MSEZL has carried out the portability test for water & report has been forwarded.
(xii)	Construction spoils, including bituminous material and other hazardous materials, must not be allowed to contaminate water courses and the dumpsites for such material must be secured, so that they should not leach into the ground water.	Noted. The project is development of R&R Colony and the scope of works is to develop the graded sites to Project displaced families with water and sanitation facilities. There are no chances of construction spoils or Hazardous materials produced from the activity.
(xiii)	The diesel generator sets to be used during construction phase should be of low sulphur diesel type and should conform to Environment (Protection) Rules prescribed for air and noise emission standards.	Noted. No Diesel generators were used during the construction works.
(xiv)	Vehicles hired for bringing construction material to the site should be in good condition and should conform to applicable air and noise emission standards and should be operated only during non-peak hours.	Works are completed.
(xv)	Ambient noise levels should conform to residential standards both during day and night. Incremental pollution loads on the	Works are completed.

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-1
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

	ambient air and noise quality should be closely monitored during construction phase. Adequate measures to reduce air and noise pollution during construction keeping in mind CPCB norms on noise limits.	
(xvi)	Fly ash should be used as building material in the construction as per the provisions of Fly Ash Notification of September 1999 and amended as on August 2003	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement of building construction and hence usage of Fly ash does not arise. However in future if MSEZL takes up any building the same will be complied.
(xvii)	Ready mixed concrete must be used in building construction.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement of building construction and hence usage of Ready mixed concrete does not arise. However in future if MSEZL takes up any building the same will be complied.
(xviii)	Storm water control and its re-use as per CGWB and BIS standards for various applications.	Complied by developing efficient drainage facilities.
(xix)	Water demand during construction should be reduced by use of pre-mixed concrete, curing agents and other best practices.	Complied.
(xx)	The Project Authorities shall not undertake either drawls of Ground water or drilling of bore wells.	Complied.
(xxi)	Separation of grey and black water should be done by the use of dual plumbing line for separation of grey and black water.	Project is development of R&R colonies and there is no scope for MSEZ in plumbing work.
(xxii)	Treatment of 100% grey water by decentralized treatment should be done.	100 cum/day Skid mounted STP is erected already in 48 Acres & 35 Acres colony to treat the grey water.
(xxiii)	Fixtures for showers, toilet flushing and drinking should be of low flow either by use of aerators or pressure reducing devices or sensor based	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-1
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

	control.	no requirement for usage of Showers, toilet flushing etc and the condition is not relevant to project implementation.
(xxiv)	Use of glass may be reduced by up to 40% of exposed area to reduce the electricity consumption and load on air conditioning. If necessary, use high quality double glass with special reflective coating in windows.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for usage of glass etc and the condition is not relevant to project implementation.
(xxv)	Roof should meet prescriptive requirement as per Energy Conservation Building Code by using appropriate thermal insulation material.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for construction of Building roof etc and the condition is not relevant to project implementation.
(xxvi)	Opaque wall should meet prescriptive requirement as per Energy Conservation Building Code which is proposed to be mandatory for all air conditioned spaces while it is optional for non-air conditioned spaces by use of appropriate thermal insulation material to fulfil the requirement.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for construction of Building wall or air conditioned spaces etc and the condition is not relevant to project implementation.
II. OPERATION PHASE		
(i)	The installation of the Sewage Treatment Plant (STP) of 16.5 MLD capacity should be carried out before the construction of the second floor of the main structures is commenced and the plant shall be got certified by an independent expert and a report in this regard should be submitted to the SEIAA immediately. Discharge of treated sewage shall conform to the norms & standards of the Karnataka State Pollution Control Board. Treated sewage should be used for flushing, gardening, etc. as proposed.	It was informed to the Assessment Authority by vide our letter dated 22nd July 2008, that MSEZL has not proposed installation of 16.5 MLD STP, but however the sewage generated in the proposed Colonies will be taken to the existing 16.5 MLD STP by Mangalore City Corporation.
(ii)	Rainwater harvesting for roof run-off with sufficient capacity artificial pond at ground	The project is development of R&R colonies. The scope of MSEZL is

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-1
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

	level for rainwater collection and also surface run-off harvesting should be implemented. Before recharging the surface runoff, pre-treatment must be done to remove suspended matter, oil and grease. Detailed rainwater harvesting plan should be submitted immediately.	development of plots and hand over to PDF's. The building construction is in the scope of PDF's.
(iii)	Ensure that the excess runoff rainwater from the green belt area, which is irrigated by treated water, does not get into infiltration pits and contaminate the ground water. Such excess flow should be safely let in to the storm water drains.	Complied.
(iv)	The solid waste generated should be properly collected and segregated before disposal to the City Municipality Facility.	Noted. Being complied.
(v)	Any hazardous waste including biomedical waste should be disposed of as per applicable Rules and norms with necessary approvals of the Karnataka State Pollution Control Board.	Noted and will be complied.
(vi)	As agreed to by the project proponent, develop minimum 13% of the project area i.e., minimum 50 acres area for green belt and plant with tree species at an espacement of 3mts x 3mts i.e. 1,111 plants/hectare. The balance 20% shall be made up by taking up tree planting on the road sides in the project and if required outside the project so as to ensure that 33% of the project area covered under green belt. The green belt design along the Periphery of the plot shall achieve attenuation factor conforming to the day and night noise standards prescribed for residential land use. The open spaces inside the plot should be suitably landscaped and covered with vegetation of indigenous variety.	The final developed area of MSEZL R&R colony is 111.24 Acres. The total green belt development area as per clearance is 36.71 Acres. Presently MSEZL has developed 12.08 acres of green belt inside project area and 24.30 acres of green belt outside the project area. The total green belt developed area by MSEZ is 36.38 Acres and balance 0.33acres will be complete by the end of year 2021.
(vii)	Incremental pollution loads on the ambient air quality; noise and water quality should be periodically monitored after commissioning of the project.	Noted.

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-1
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

(viii)	Application of Solar energy should be incorporated for illumination of common areas, lighting for gardens and street lighting in addition to provision for solar water heating. A hybrid system or fully solar system for the complex should be provided. Details in this regard should be submitted to the SEIAA.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for solar water heating or lighting for gardens and the condition is not relevant to project implementation. The colony will be handed over to Mangalore City Corporation after development & O&M tenure issued. Hence the street lighting with MESCOM connections are provided.
(ix)	Traffic congestion near the entry and exit points from the roads adjoining the proposed project site must be avoided. Parking must be fully internalized and no public space should be utilized.	Complied.
(x)	A Report on the energy conservation measures confirming to energy conservation norms finalized by Bureau of Energy Efficiency should be prepared incorporating details about building materials & technology, R&U Factors etc and submit to the SEIAA in three months time.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for energy consumption equipments or Building appliances and the condition is not relevant to project implementation.
B. GENERAL CONDITIONS		
(i)	The Environmental safeguards contained in the EIA Report should be implemented in letter and spirit.	Complied.
(ii)	All commitments made by the proponents in their application, and subsequent letters addressed to the SEAC/SEIAA should be accomplished before the construction work of the project is completed.	Complied.
(iii)	Six monthly monitoring reports should be submitted to the SEIAA and the Regional Office, MoEF, Bangalore, failing which action may be taken to cancel the Environmental Clearance certificate issued.	Noted. Being complied.
(iv)	Officials from the Department of Ecology and Environment, Bangalore/Regional Office of MoEF, Bangalore/Regional Director	The complete sets of documents submitted to MoEF/SEIAA were forwarded as directed in the

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-1
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

	(Environment) Dept. of Ecology and Environment, Mangalore/ Regional Officer, KSPCB Mangalore and KSPCB Bangalore who would be monitoring the implementation of Environmental safe guards should be given full cooperation, facilities and documents/data by the project proponents during their inspection. A complete set of all the documents submitted to MoEF/SEIAA should be forwarded to the CCF, Regional Office of MoEF, Bangalore/Department of Ecology and Environment, Bangalore /Regional Director, (Environment) Department of Ecology and Environment, Mangalore/Regional Officer, KSPCB Mangalore and KSPCB Bangalore.	Conditions. MSEZL will comply in providing the full cooperation to the Monitoring officers.
(v)	In the case of any change(s) in the scope of project, the project would require a fresh appraisal by this Authority.	Noted.
(vi)	The Authority reserves the right to add additional safeguard measures subsequently, if found necessary, and to take action including revoking of the environment clearance under the provisions of the Environment (Protection) Act, 1986, to ensure effective implementation of the suggested safeguard measures in a time bound and satisfactory manner.	Noted.
(vii)	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act 1980 and Wildlife (Protection) Act, 1972 etc shall be obtained, as applicable by project proponents from the competent authorities.	Noted.
(viii)	The project proponent should advertise in at least two local Newspapers widely circulated in the region, one of which shall be in vernacular language informing that the project has been accorded environmental clearance and copies of clearance letters are available with the Karnataka State pollution	Noted. The advertisement was made in three local News papers and the copy of the same was forwarded to all concerned as directed.

	Control board and may also be seen on the website of the Ecology and Environment Department at http://seiaa.kar.nic.in. The advertisement should be made within 7 days from the day of issue of the clearance letter and a copy of the same should be forwarded to the Regional Office of MoEF at Bangalore/Department of Environment and Ecology, Bangalore.	
(ix)	These stipulations would be enforced among others under the provisions of water (Prevention and Control of Pollution) Act, 1974, The Air (Prevention and Control of Pollution) act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification,2006.	Noted.
(x)	Under the provisions of Environment (Protection) Act, 1986, legal action shall be initiated against the project proponent if it was found that construction of the project has been started without obtaining environmental clearance.	Noted.

The R&R Package is being implemented strictly as per Approved policy by State Government. In 1st PDF 1246 families out of 1253, In 2nd PDF 214 families out of 214, In 3rd PDF 146 families out of 147 families & 14 shops has been compensated with R&R Packages. Totally 1620 families have vacated their houses and the process is in progress for the balance.

10 nos. R&R colonies developed - 1415 sites allotted to eligible Project Displaced Families so far and balance 28 is in the process. 358 nominees of the displaced people given training at Karnataka Polytechnic (KPT) for diploma equivalent programs in Chemical, Mechanical & Electrical disciplines and 347 nominees have already been employed. 1628 nominees would have been eligible for employment out of which 872 nominees have opted for "one time"

Mangalore SEZ Limited
Sy. No 168/3A, Plot No U-1
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

compensation in lieu of job and balance 756 nominees opted for the jobs. 604 nos. PDF nominees have already got employment out of 756 nos. empanelled. The process of handing over civic communities, parks & roads to local bodies and service to utility provider is under way in different stages.

With Regards

Sr. General Manager

Civil & Environment

Mangalore SEZ Ltd.

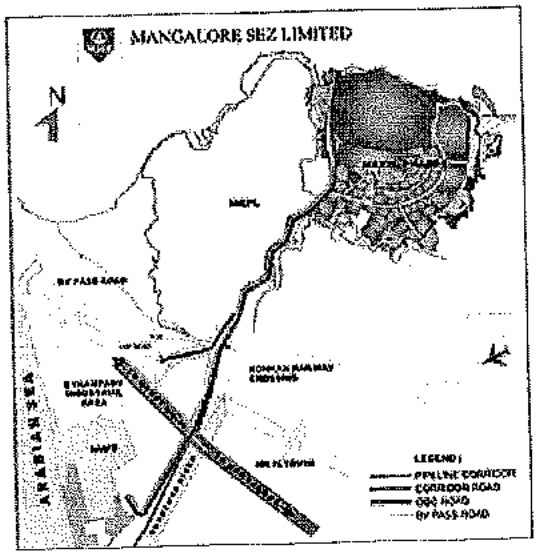
Copy to: 1) Environmental Officer, Karnataka State Pollution Control Board, Mangalore.

7499/2020

Mangalore SEZ Limited

ENVIRONMENTAL MONITORING REPORT

AMBIENT AIR QUALITY AND MONITORING REPORT FOR THE MONTH OF Oct 2020



Viny kumar
The report does not cover the water analysis. Check and revert back
02/11/2020

Submitted By

M/s *OneEarth* Enviro Labs
(NABL Accredited, MOEF&CC Recognized Laboratory)
KSIA Building, 1st Floor, Baikampady Industrial Estate, Mangaluru,
Karnataka – 575011 Email: oneearthenviro@gmail.com

INDEX

AMBIENT AIR QUALITY MONITORING REPORT - October 2020

1. INTRODUCTION

Mangalore Special Economic Zone, known as MSEZ is spread across 1638 acres, located 15 km from Mangalore city, off Cochin-Mumbai NH 66, 5 km from Mangalore International Airport and 8 km from all-weather deep draft sea port, New Mangalore Port in Mangalore, Karnataka, India. MSEZ limited is jointly promoted by Oil and Natural Gas Corporation (ONGC), a fortune 500 company & infrastructure leasing & finance services, one of India's leading infrastructure development and finance companies, Karnataka Industrial Area Development Board (KIADB) and Kanara Chamber of Commerce and Industry (KCCI). A unique combination of Government entities, a large financial institution and an apex chamber brings in the expertise to develop MSEZL with world-class industrial infrastructure.

2. ENVIRONMENT MONITORING

Environmental monitoring is being carried out at Mangalore SEZ, following guidelines and regulations of MoEF&CC/CPCB and KSPCB statutory norms. In this regard, MSEZL has awarded the work to M/s *OneEarth* Enviro Labs and to monitor air quality, water quality & noise level for the three years. As per work order, during October 2020, we have conducted ambient air quality at 3 locations.

3. SCOPE AND METHODOLOGY

The scope of work carried out and methodology adopted for the survey are described below:

3.1. Ambient Air Quality

Ambient air quality monitoring was carried out at each location on 24 hour basis on two consecutive days in this month. The identified monitoring locations are: 1- WTP, 2- CETP & 3-Permude Area. To assess the ambient air quality status, monitoring stations are identified on the basis of meteorology in the upwind and downwind direction as well as to represent the cross sectional scenario of the MSEZ. Based on the activities the parameters chosen for assessment of air quality are PM2.5-Particulate matter size less than 2.5 Micron, PM10-Particulate matter size less than 10 Micron; SO_2 Sulphur dioxide; NO_2-Nitrogen-di-oxide; CO-Carbon Mono Oxide (DL 0.1 mg/m^3);O_3-Ozone (DL 10 $\mu g/m^3$);NH_3-Ammonia (DL 5 $\mu g/m^3$); Pb-Lead (DL 0.05 $\mu g/m^3$); As-Arsenic (DL 0.1 ng/m^3); Ni- Nickel (DL 0.5 ng/m^3); Benzene-(DL 1 $\mu g/m^3$); B(α)P- Benzo-α-pyrene(DL 0.1 ng/m^3) as per CPCB stipulation.

3.1.1. Sampling and analysis of PM2.5 and PM10 in ambient air (Gravimetric Method)

i. Check the filter for any physical damages
ii. Mark identification number on the filter
iii. Condition the filter in conditioning room / desiccator for 24 hours
iv. Record initial weight
v. Place the filter on the sampler
vi. Run the sampler for twenty four hours
vii. Record the flow rate on hourly basis
viii. Remove the filter from the sampler
ix. Keep the exposed filter in a proper container
x. Record the total time of sampling & average flow rate
xi. Again condition the filter in conditioning room / desiccator for 24 hours
xii. Record final weight

Laboratory analysis:

Weighing of exposed samples:

Calculate the concentration of PM10 or PM2.5 in $\mu g/m^3$

Calculations:

i. Average flow rate (initial and final flow rates) in L/ min
= (Initial flow rate + final flow rate)/ 2
ii. Total vol. of air sampled (TVA) in m^3
= Avg. flow rate (L/min) * 10^{-3} (m^3/L) * sampling time (hr) * 60 (min/hr)
iii. Concentration of PM in $\mu g/m^3$
= $(w_f - w_i)$ (mg)/ TVA (m^3) * $10^6 \mu g/m^3$ *where* w_i *=initial &* w_f*=final weight of the filter paper*

3.1.2. Sampling and analysis of Sulphur dioxide

i. Place 30 ml of absorbing media in an impinger
ii. Connect it to the gas-sampling manifold of gas sampling device (RDS/ HVS).
iii. Draw air at a sampling rate of 1 lpm (litre per minute) for four hours
iv. Check the volume of sample at the end of sampling and record it
v. Transfer the exposed samples in storage bottle and preserve
vi. Prepare calibration graph as recommended in method
vii. Take 10/20 ml. aliquot of sample in 25 ml. Vol. Flask
viii. Take 10/20 ml. of unexposed sample in 25 ml. Vol. Flask (blank)
ix. Add 1 ml Sulphamic acid. Keep it 10 minutes
x. Add 2 ml formaldehyde
xi. Add 2 ml working PRA
xii. Make up to mark (25 ml.) with distilled water.

xiii. Keep it 30 minutes for reaction
xiv. Set Zero of spectrophotometer with Distilled water
xv. Measure absorbance at 560 nm
xvi. Calculate concentration using calibration graph
xvii. Calculate concentration of Sulphur Dioxide in $\mu g/m^3$

3.1.3. Sampling and analysis of Nitrogen-di-oxide

i. Place 30 ml of absorbing media in an impinger
ii. Connect it to the gas sampling manifold of gas sampling device (RDS/HVS).
iii. Draw air at a sampling rate of 1 lpm for four hours
iv. Check the volume of sample at the end of sampling and record it
v. Transfer the exposed samples in storage bottle and preserve
vi. Prepare calibration graph as recommended in method
vii. Take 10 ml. aliquot of sample in 50 ml. Vol. Flask
viii. Take 10 ml. of unexposed sample in 50 ml. Vol. Flask (blank)
ix. Add 1 ml hydrogen peroxide
x. Add 10 ml sulphanilamide
xi. Add 1.4 ml NEDA
xii. Make up to mark (50 ml.) with distilled water.
xiii. Keep it 10 minutes for reaction
xiv. Set Zero of spectrophotometer with Distilled water
xv. Measure absorbance at 540 nm
xvi. Calculate concentration using calibration graph
xvii. Calculate concentration of Nitrogen Dioxide in $\mu g/m^3$

3.1.4. Sampling and analysis of Carbon Mono Oxide

Using Gas analyzer or by Gas detector tube or by portable GAS Detector calibrated against NIST Certified Gas cylinders of known concentration.

Gas Analyzer

Preparation of sample train:

i. Sampling begins with conditioning a sampling train and then gas analyzer
ii. Pressure system is preferred to condition the sampling train by installing pump before the analyzer. Reducing valve needs to be fitted between the analyser and pump to eliminate the pulsing effect of pump on the analyzer
iii. Flow meter is to be installed just before the analyzer
iv. A fibre filter is used to capture the particulate matter prior to the optical cell to prevent its interference. As it often accumulates on the optical cell reducing the efficiency
v. To eliminate the interference of water vapour, refrigeration or desiccant with magnesium perchlorate could be used

Mode of operation:

i. Continuous analysis is carried out at the flow rate of about 100 ml/min to 1000 ml/min (depending upon the level of pollution near the location) for the desired sampling period

ii. Discrete sampling could also be possible with infra red analyzer. It however requires proper cleaning of the sampling train.

Gas detector tube

Mode of operation:

1. At the flow rate of about 100 ml/min using hand held pump draw 250ml of air sample into the tube.
2. Based on colour indicator, concentration of CO is determined.

Steps:

i. Calibration of Gas Tube detector can be carried out using NIST Certified CO gas of known concentration

ii. Sampler is allowed to warm up for some time before drawing the sample and temperature stability

Portable CO GAS Detector

Mode of operation:

1. Switch on the CO GAS meter and wait for some time for meter to get adjusted to the environmental conditions
2. Once steady CO Concentration is displayed note down the display.

Steps:

i. Calibration of Gas detector meter to be carried out using NIST Certified CO gas of known concentration

ii. Sampler is allowed to warm up for some time before drawing the sample and temperature stability

3.1.5 Sampling and analysis of Ozone

i. Place10 ml of absorbing media in an impinger

ii. Connect it to the gas sampling manifold of gas sampling device (RDS/HVS).

iii. Draw air at a sampling rate of 1 lpm for 60 minutes

iv. Do not expose the absorbing reagent to direct sunlight

v. Add de ionized water to make up the evaporation loss during sampling and bring the volume to 10 ml

vi. Prepare calibration graph as recommended in method

vii. Within 30 to 60 minutes after sample collection, read the absorbance in a cuvette at352 nm against a reference cuvette containing de ionized water

viii. Calculate concentration using calibration graph

ix. Calculate concentration of Ozone in $\mu g/m^3$

3.1.6 Sampling and analysis of Ammonia

i. Dilute 10ml of concentrated HCl (12 M) to 100 ml with distilled water. Wash the glassware with the water and finally rinse it thrice with distilled water

ii. Adjust the Flow rate at 1L/min of the rotameter and the manifolds of the attached APM 411/APM 460 Dx

iii. Place 10 ml of absorbing media in each midget impinger for samples and field blanks. Assemble (in order) prefilter & holder, flow meter, impinger and pump. Sample at the rate of 1L/min for 1 hour duration

iv. Record the sampling time, average flow rate and final volume of the solution. After the sample collection, transfer the solution in the impinger to polyethylene bottle and recap it tightly for transport to laboratory for analysis

v. Prepare the absorbing media, various reagents and working solutions as per the method described in protocol. Standardize the sodium thiosulphate solution by titrating it against potassium iodate and Sodium hypochlorite by titrating it against standardized sodium thiosulphate solution

vi. Take 25 ml measuring flasks and rinse with distilled water. Transfer the contents from polyethylene bottles to 25 ml measuring flasks (Maintain all the solutions at 25°C). Add 2 ml of buffer (to maintain pH). Add 5 ml of working phenol solution, mix, fill to about 22 ml with distilled water and then add 2.5 ml of working hypochlorite solution & mix rapidly. Store in the dark for 30 mins to develop colour. Measure the absorbance of the solution at 630 nm using UV Spectrophotometer

vii. Pipette 0.5, 1.0 and 1.5 ml of working standard solution (working ammonia solution) in 25 ml measuring flasks. Fill to 10 ml mark with absorbing solution (0.1 M H_2SO_4). Add the reagents as to each flask as in the procedure for analysis. Read the absorbance of each standard against the reagent blank.

viii. Plot the calibration curve

ix. Calculate the concentration of NH_3 in $\mu g/m^3$

3.1.7. Sampling and analysis of Lead, Nickel, Arsenic:

1. Sampling procedure:

Tilt back the inlet and secure it according to manufacturer's instructions. Loosen the face-plate wing-nuts and remove the face plate. Remove the filter from its jacket and centre it on the support screen with the rough side of the filter facing upwards. Replace the face-plate and tighten the wing-nuts to secure the rubber gasket against the filter edge. Gently lower the inlet. For automatically flow-controlled units, record the designated flow rate on the data sheet. Record the reading of the elapsed time meter. The specified length of sampling is commonly 8 hours or 24 hours. During this period, several reading (hourly) of flow rate should be taken. After the required time of sampling, record the flow meter reading and take out the filter media from the sampler and put in a container or envelope

2. Analysis:

i. Hot plate procedure:

Cut a 1" x 8" strip or half the filter from the 8" x 10" filter using a stainless steel pizza cutter. Place the filter in a beaker using vinyl gloves or plastic forceps. Cover the filter with the extraction solution (3% HNO_3& 8% HCl). Place beaker on the hotplate, contained in a fume hood, and reflux gently while covered with a watch glass for 30 min. Do not allow sample to dry. Remove the beakers from the hot-plate and allow to cool. Rinse the beaker walls and wash with distilled water. Add approximately 10 mL reagent water to the remaining filter material in the beaker and allow to stand for at least 30 min. Transfer the extraction fluid in the beaker to a 100 mL volumetric flask or other graduated vessel. Rinse the beaker and any remaining solid material with distilled water and add the rinses to the flask. Dilute to the mark with distilled water (Type I) water and shake. The final extraction solution concentration is 3 % HNO_3/ 8% HCl. The filtered sample is now ready for analysis

2.1. Analysis of samples:

i. Instrument / Equipment:

A light beam containing the corresponding wavelength of the energy required to raise the atoms of the analyte from the ground state to the excited state is directed through the flame or furnace. This wavelength is observed by a monochromator and a detector that measure the amount of light absorbed by the element, hence the number of atoms in the ground state in the flame or furnace. A hollow cathode lamp for the element being determined provides a source of that metal's particular absorption wavelength. The method describes both flame atomic absorption (FAA) spectroscopy and graphite furnace atomic absorption (GFAA) spectroscopy. Atomic Absorption Spectrophotometer - analyze the metals by Flame; if results are below detection limit then go for GTA. Arsenic is analyzed by Flame - VGA.

ii. Flame Procedure:

Set the atomic absorption spectrophotometer for the standard condition as follows: choose the correct hollow cathode lamp, align the instrument, position the monochromator at the value recommended by the manufacturer, select the proper monochromator slit width, set the light source current, ignite the flame, regulate the flow of fuel and oxidant, adjust the burner for maximum absorption and stability and balance the meter. Run a series of standards of the metal of interest and construct a calibration curve. Aspirate the blanks and samples. Dilute samples that exceed the calibration range. For Lead (Pb) and Nickel (Ni), the wavelength required for analysis is 217 nm and 232 nm respectively. Where as in case of Arsenic (As), the VGA should attach with Flame and the wavelength required for analysis is 193.7nm.

3. Calibration:

Prepare standard solutions from the stock solutions. Select at least three standards to cover linear range as recommended by method. Aspirate the standards into the flame or inject the standards into the furnace and record the absorbance. Prepare the calibration graph by plotting absorbance and concentration in µg/ml.

i. Preparation of Standards:

For each metal that is to be determined, standards of known concentration must be acquired commercially certified standards.

ii. Standard Curve:

Standard curve is prepared by using standard solutions of known concentration.

4. Calculations:

i. Sample Air Volume:

Sample air volume can be calculated by using the following equation:

$V = (Q) (t)$

Where,

V = volume of air, m^3

Q = average sampling rate, m3/min.

t = time in minutes.

ii. Metal Concentration:

$C = (Ms - Mb) \times Vs \times Fa/V \times Ft$

Where,

C = concentration, µg metal/m^3
Ms = metal concentration µg/mL
Mb = blank concentration µg/mL
Vs = total volume of extraction in mL
Fa = total area of exposed filter in cm^2
V = Volume of air sampled in m^3
Ft = Area of filter taken for digestion in cm^2

3.1.8. Sampling and analysis of Benzo-α-pyrene:

Benzo (a) Pyrene (BaP) is one of the most important constituent of PAH compounds and also one of the most potent carcinogens. This can be measured in both particulate phase and vapour phase. In the vapour phase the concentration of B(a)P is significantly less than the particulate phase. Therefore, more care to be taken for the measurement of Benzo (a) Pyrene in the particulate phase. The molecular formula of B(a)P is C_20H_{12} having molecular weight of 252.

It is based on BIS method IS 5182 (Part 12):2004 and USEPA method (TO-13). This method is designed to collect particulate phase PAHs in ambient air and fugitive emissions and to determine individual PAH compounds using capillary gas chromatograph equipped with flame ionization detector. It is a high volume ($1.2m^3$/min) sampling method capable of detecting sub.ng/m^3 concentration of PAH in 24 hours sample (i.e. collected in 3 shifts of 8 hour each with 480 m^3 sampling volume of air).

i. Sampling:

i. Instrument/Filter Selection:

24 hr. sampling using PM_{10} high volume sampler with 8 hourly samples using EPM-2000 glass fibre or equivalent filter

ii. Sample Analysis

a. Extraction:

Filter papers (half of all the filters papers collected in a day) are cut into strips using scissors and transfer to 250 ml beaker. Add ~50 ml. of Toluene (GC/HPLC grade). These samples are extracted with toluene using ultra sonic sample can be extracted using Soxhlet bath for about 30 minutes. Repeat the procedure twice (50ml x 2 times) for complete extraction. Alternatively, extraction apparatus for about 8 hr. with Toluene and repeat it twice.

b. Filtration:

Filter the extracted samples with Whatman filter paper No.41 containing 2 gm of Anhydrous Sodium Sulphate (to remove moisture).

c. Concentration:

After filtration, the filtrate is concentrated using Rotary vacuum evaporator to 2ml final volume.

d. Clean-up with silica Gel:

To clean up the impurities, pass 2 ml of concentrated sample through silica gel column (pre conditioned, 60-80 mesh, and 200-250mm×10 mm with Teflon stopcock). After cleaning add 5ml cyclohexane and collect the elute in 25 ml beaker. Repeat the process for at least 3 times and collect it in the same beaker. Alternatively Solid Phase Extraction (SPE) could be used for clean up the impurities of sample.

e. Re-concentration with rotary vacuum evaporator:

The Cleaned up extract/filtrate (approximately 17 ml) is further concentrated using rotary evaporator and it is evaporated to nearly dryness with Nitrogen.

f. Final Sample volume:

The dried sample is re-dissolved in 1ml of toluene and transfer into 4 or 5 ml amber vials final analysis.

ii. Calculations:

Calculate the concentration in ng/µL of each identified analyte or B(a)P in the sample extract (Cs) as follows:

Calculate the air volume from the periodic flow reading taken during sampling using the following equation:

$V = Q \times T$

Where,

Q =Average flow rate of sampling m^3/min

T = sampling time, in min.

V = total sample volume at ambient conditions in m^3

Concentration of analyte i.e B(a)P:

The concentration of PAH compound or Benzo(a)pyrene in ng /m^3 in the air sampled is given by:

C (ng /m3) = Cs * Ve / Vi *Vs

Where,

Cs : Concentration of Benzo (a) pyrene in ng / µL in the sample extract recorded by GC.

Ve : Final volume of extract in µL (i.e 1000)

Vi : Injection Volume (i.e 1µL)

Vs : Volume of air sample in m^3

@

4. MONITORING SCHEDULE OF MANGALORE SEZ LIMITED ENVIRONMENTAL MONITORING

Sl.No	Environmental Attributes monitored	Parameters analyzed and presented in analysis Report	Monitoring requirement
1	Ambient Air Quality	PM2.5, PM10, SO_2, NO_2, CO, O_3, NH_3, Pb, As, Ni, Benzene, B(α)P	3 Locations/Month, 24 hrs/day consecutive 2 days
2	Surface/ Ground Water Quality	Colour, pH (at 25 °C), Odour, Taste, Turbidity, Total Dissolved Solids, Alkalinity as $CaCO_3$,Total Hardness, Calcium as Ca, Magnesium as Mg, Iron as Fe, Sulphate as SO_4, Chloride as Cl, Boron as B, Residual free chlorine, Fluoride, Phenolic Compounds, Manganese as Mn, Zinc as Zn, Arsenic as As, Cyanide as CN, Cadmium as Cd, Chromium as Cr, Aluminium as Al, Selenium as Se, Lead as Pb, Mercury as Hg, Nitrate Nitrogen NO_3, *E.Coli*	Ten Locations, Season wise (Summer, Winter, Post monsoon), By using grab sampling technique
3	Ambient Noise Level	Noise Level (dB) in Day and Night	Two Locations, two non consecutive days per week, for two weeks and Season wise (Summer, Winter, Post monsoon)

@

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

~~OEL/A/1/08/05~~

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

~~Report No. A/2020/0288~~
Report Date: 30/10/2020

AMBIENT AIR QUALITY ANALYSIS REPORT

Name	M/s Mangalore SEZ Limited		
Address	Survey No 168/3A | Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142		
Sample Collected By	OneEarth Enviro Labs		
Sampling Location	**C ETP**		
Date of Sampling	20/10/2020 to 21/10/2020	Analysis Start Date	20/10/2020
Date of Sample Receipt	20/10/2020,21/10/2020	Analysis End Date	30/10/2020
Sampling Details	Ambient Air Quality Monitoring for 24 Hrs		

Humidity % 71.20 Temp °C 31°C Pressure mmHg 756.89

Sl. No	Date & Time / Location / Parameters	20/10/2020 1000 / A 288 / Result (µg/m³)	NAAQ STD	Protocol
1	Respirable Particulate Matter PM2.5	23.04	60	IS 5182 : Part 24
2	Respirable Particulate Matter PM10	64.97	100	IS 5182 : Part 23
3	SPM	BDL	500	IS 5182 : Part 4
4	Sulphur Dioxide SO_2	BDL	80	IS 5182 : Part 2
5	Nitrogen Dioxide NO_2	BDL	80	IS 5182 : Part 6
6	Ozone O_3	30.72	180	IS 5182 : Part 9
7	Ammonia NH_3	BDL	400	IS 5182 : Part 25
8	Carbon Monoxide CO (mg/m³)	1.24	4	Gas Detector
9	Lead Pb	ND	1	IS 5182 : Part 22
10	Arsenic As (ng/m3)	ND	6	CPCB Guidelines
11	Nickel Ni (ng/m3)	ND	20	IS 5182 : Part 26
12	Benzene C6H6	ND	5	IS 5182 : Part 11
13	Benzo (a) pyrine BaP (ng/m3)	ND	1	IS 5182 : Part 12

BDL-Below Detection Limit ND-Not Detectable DL-Detection Limit BDL for SO_2 - 4 µg/m³ & NO_2 - 9.4µg/m³
µ-micro n-nano g-gram

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

One Earth Enviro Labs PHONE 2408011 Mangaluru - 575 011

For OneEarth Enviro Labs

Authorized Signatory
(Murlidhar S M, Quality Manager)

Note: 1.The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Samples will be destroyed after fifteen days from the date of issue of test reports unless otherwise specified. Perishable samples are not retained. 4. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only. 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: A/2020/0289
Report Date: 30/10/2020

AMBIENT AIR QUALITY ANALYSIS REPORT

Name	M/s Mangalore SEZ Limited		
Address	Survey No 168/3A | Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142		
Sample Collected By	OneEarth Enviro Labs		
Sampling Location	**WTP**		
Date of Sampling	20/10/2020 to 21/10/2020	Analysis Start Date	20/10/2020
Date of Sample Receipt	20/10/2020,21/10/2020	Analysis End Date	30/10/2020
Sampling Details	Ambient Air Quality Monitoring for 24 Hrs		

Humidity % 71.20 Temp °C 31°C Pressure mmHg 756.89

Sl. No	Date & Time / Location / Parameters	20/10/2020 1030 / 289 / Result (µg/m³)	NAAQ STD	Protocol
1	Respirable Particulate Matter PM2.5	14.00	60	IS 5182 : Part 24
2	Respirable Particulate Matter PM10	44.91	100	IS 5182 : Part 23
3	SPM	10.98	500	IS 5182 : Part 4
4	Sulphur Dioxide SO_2	BDL	80	IS 5182 : Part 2
5	Nitrogen Dioxide NO_2	BDL	80	IS 5182 : Part 6
6	Ozone O_3	36.57	180	IS 5182 : Part 9
7	Ammonia NH_3	BDL	400	IS 5182 : Part 25
8	Carbon Monoxide CO (mg/m^3)	ND	4	Gas Detector
9	Lead Pb	ND	1	IS 5182 : Part 22
10	Arsenic As (ng/m3)	ND	6	CPCB Guidelines
11	Nickel Ni (ng/m3)	ND	20	IS 5182 : Part 26
12	Benzene C6H6	ND	5	IS 5182 : Part 11
13	Benzo (a) pyrine BaP (ng/m3)	ND	1	IS 5182 : Part 12

BDL-Below Detection Limit ND-Not Detectable DL-Detection Limit BDL for SO_2 - 4 µg/m³ & NO_2 - 9.4µg/m³
µ-micro n-nano g-gram

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

One Earth Enviro Labs PHONE 2409611

For OneEarth Enviro Labs

Authorized Signatory
(Murlidhar S M, Quality Manager)

Note: 1.The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Samples will be destroyed after fifteen days from the date of issue of test reports unless otherwise specified. Perishable samples are not retained. 4. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only. 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: A/2020/0290
Report Date: 30/10/2020

AMBIENT AIR QUALITY ANALYSIS REPORT

Name	M/s Mangalore SEZ Limited		
Address	Survey No 168/3A | Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142		
Sample Collected By	OneEarth Enviro Labs		
Sampling Location	**Permude Church**		
Date of Sampling	20/10/2020 to 21/10/2020	Analysis Start Date	20/10/2020
Date of Sample Receipt	20/10/2020,21/10/2020	Analysis End Date	30/10/2020
Sampling Details	Ambient Air Quality Monitoring for 24 Hrs		

Humidity %	71.20	Temp °C	31°C	Pressure mmHg	756.89

Sl. No	Date & Time / Location / Parameters	20/10/2020 1430 A 290 Result (µg/m³)	NAAQ STD	Protocol
1	Respirable Particulate Matter PM2.5	36.49	60	IS 5182 : Part 24
2	Respirable Particulate Matter PM10	64.66	100	IS 5182 : Part 23
3	SPM	6.93	500	IS 5182 : Part 4
4	Sulphur Dioxide SO_2	BDL	80	IS 5182 : Part 2
5	Nitrogen Dioxide NO_2	BDL	80	IS 5182 : Part 6
6	Ozone O_3	45.35	180	IS 5182 : Part 9
7	Ammonia NH_3	BDL	400	IS 5182 : Part 25
8	Carbon Monoxide CO (mg/m³)	ND	4	Gas Detector
9	Lead Pb	ND	1	IS 5182 : Part 22
10	Arsenic As (ng/m3)	ND	6	CPCB Guidelines
11	Nickel Ni (ng/m3)	ND	20	IS 5182 : Part 26
12	Benzene C6H6	ND	5	IS 5182 : Part 11
13	Benzo (a) pyrine BaP (ng/m3)	ND	1	IS 5182 : Part 12

BDL-Below Detection Limit ND-Not Detectable DL-Detection Limit BDL for SO_2 - 4 µg/m³ & NO_2 - 9.4µg/m³
µ-micro n-nano g-gram

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

One Earth Enviro Labs PHONE 2409011 Mangaluru - 575 011

For OneEarth Enviro Labs

Authorized Signatory
(Murlidhar S M, Quality Manager)

Note: 1.The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Samples will be destroyed after fifteen days from the date of issue of test reports unless otherwise specified. Perishable samples are not retained. 4. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only. 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: A/2020/0293
Report Date: 30/10/2020

AMBIENT AIR QUALITY ANALYSIS REPORT

Name	M/s Mangalore SEZ Limited		
Address	Survey No 168/3A | Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142		
Sample Collected By	OneEarth Enviro Labs		
Sampling Location	**C ETP**		
Date of Sampling	21/10/2020 to 22/10/2020	Analysis Start Date	21/10/2020
Date of Sample Receipt	21/10/2020,22/10/2020	Analysis End Date	30/10/2020
Sampling Details	Ambient Air Quality Monitoring for 24 Hrs		
Humidity % 69.20	Temp °C 31°C	Pressure mmHg	756.96

Sl. No	Date & Time / Location / Parameters	21/10/2020 1030 / 293 / Result (µg/m³)	NAAQ STD	Protocol
1	Respirable Particulate Matter PM2.5	11.50	60	IS 5182 : Part 24
2	Respirable Particulate Matter PM10	66.44	100	IS 5182 : Part 23
3	SPM	14.42	500	IS 5182 : Part 4
4	Sulphur Dioxide SO_2	BDL	80	IS 5182 : Part 2
5	Nitrogen Dioxide NO_2	BDL	80	IS 5182 : Part 6
6	Ozone O_3	ND	180	IS 5182 : Part 9
7	Ammonia NH_3	ND	400	IS 5182 : Part 25
8	Carbon Monoxide CO (mg/m^3)	ND	4	Gas Detector
9	Lead Pb	ND	1	IS 5182 : Part 22
10	Arsenic As (ng/m3)	ND	6	CPCB Guidelines
11	Nickel Ni (ng/m3)	ND	20	IS 5182 : Part 26
12	Benzene C6H6	ND	5	IS 5182 : Part 11
13	Benzo (a) pyrine BaP (ng/m3)	ND	1	IS 5182 : Part 12

BDL-Below Detection Limit ND-Not Detectable DL-Detection Limit BDL for SO_2 - 4 µg/m³ & NO_2 - 9.4µg/m³
µ-micro n-nano g-gram

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

For OneEarth Enviro Labs

Authorized Signatory
(Murlidhar S M, Quality Manager)

Note: 1.The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Samples will be destroyed after fifteen days from the date of issue of test reports unless otherwise specified. Perishable samples are not retained. 4. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only. 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: A/2020/0294
Report Date: 30/10/2020

AMBIENT AIR QUALITY ANALYSIS REPORT

Name	M/s Mangalore SEZ Limited		
Address	Survey No 168/3A | Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142		
Sample Collected By	OneEarth Enviro Labs		
Sampling Location	**WTP**		
Date of Sampling	21/10/2020 to 22/10/2020	Analysis Start Date	21/10/2020
Date of Sample Receipt	21/10/2020,22/10/2020	Analysis End Date	30/10/2020
Sampling Details	Ambient Air Quality Monitoring for 24 Hrs		

Humidity % 69.20 Temp °C 31°C Pressure mmHg 756.96

Sl. No	Date & Time / Location / Parameters	21/10/2020 1100 / 294 / Result (µg/m³)	NAAQ STD	Protocol
1	Respirable Particulate Matter PM2.5	10.08	60	IS 5182 : Part 24
2	Respirable Particulate Matter PM10	22.21	100	IS 5182 : Part 23
3	SPM	6.26	500	IS 5182 : Part 4
4	Sulphur Dioxide SO_2	BDL	80	IS 5182 : Part 2
5	Nitrogen Dioxide NO_2	BDL	80	IS 5182 : Part 6
6	Ozone O_3	ND	180	IS 5182 : Part 9
7	Ammonia NH_3	ND	400	IS 5182 : Part 25
8	Carbon Monoxide CO (mg/m^3)	ND	4	Gas Detector
9	Lead Pb	ND	1	IS 5182 : Part 22
10	Arsenic As (ng/m3)	ND	6	CPCB Guidelines
11	Nickel Ni (ng/m3)	ND	20	IS 5182 : Part 26
12	Benzene C6H6	ND	5	IS 5182 : Part 11
13	Benzo (a) pyrine BaP (ng/m3)	ND	1	IS 5182 : Part 12

BDL-Below Detection Limit ND-Not Detectable DL-Detection Limit BDL for SO_2 - 4 µg/m³ & NO_2 - 9.4µg/m³
µ-micro n-nano g-gram

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

One Earth Enviro Labs PHONE 2409011 Mangaluru - 575 011

For OneEarth Enviro Labs

Authorized Signatory
(Murlidhar S M, Quality Manager)

Note: 1.The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Samples will be destroyed after fifteen days from the date of issue of test reports unless otherwise specified. Perishable samples are not retained. 4. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only. 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: A/2020/0295
Report Date: 30/10/2020

AMBIENT AIR QUALITY ANALYSIS REPORT

Name	M/s Mangalore SEZ Limited		
Address	Survey No 168/3A | Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142		
Sample Collected By	OneEarth Enviro Labs		
Sampling Location	**Permude Church**		
Date of Sampling	21/10/2020 to 22/10/2020	Analysis Start Date	21/10/2020
Date of Sample Receipt	21/10/2020,22/10/2020	Analysis End Date	30/10/2020
Sampling Details	Ambient Air Quality Monitoring for 24 Hrs		

Humidity % 69.20 Temp °C 31°C Pressure mmHg 756.96

Sl. No	Date & Time / Location / Parameters	21/10/2020 1500 / 295 / Result (µg/m³)	NAAQ STD	Protocol
1	Respirable Particulate Matter PM2.5	36.28	60	IS 5182 : Part 24
2	Respirable Particulate Matter PM10	58.89	100	IS 5182 : Part 23
3	SPM	6.73	500	IS 5182 : Part 4
4	Sulphur Dioxide SO_2	BDL	80	IS 5182 : Part 2
5	Nitrogen Dioxide NO_2	BDL	80	IS 5182 : Part 6
6	Ozone O_3	ND	180	IS 5182 : Part 9
7	Ammonia NH_3	BDL	400	IS 5182 : Part 25
8	Carbon Monoxide CO (mg/m³)	ND	4	Gas Detector
9	Lead Pb	ND	1	IS 5182 : Part 22
10	Arsenic As (ng/m3)	ND	6	CPCB Guidelines
11	Nickel Ni (ng/m3)	BDL	20	IS 5182 : Part 26
12	Benzene C6H6	ND	5	IS 5182 : Part 11
13	Benzo (a) pyrine BaP (ng/m3)	ND	1	IS 5182 : Part 12

BDL-Below Detection Limit ND-Not Detectable DL-Detection Limit BDL for SO_2 - 4 µg/m³ & NO_2 - 9.4µg/m³
µ-micro n-nano g-gram

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

One Earth Enviro Labs PHONE 2409011 Mangaluru - 575 011

For OneEarth Enviro Labs

Authorized Signatory
(Murlidhar S M, Quality Manager)

Note: 1.The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Samples will be destroyed after fifteen days from the date of issue of test reports unless otherwise specified. Perishable samples are not retained. 4. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only. 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847

NABL ACCREDITED AS PER ISO/IEC 17025:2005 | ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: N/2020/0124-1
Report Date:30/10/2020

AMBIENT NOISE LEVEL MONITORING REPORT

Name of the Industry	M/s Mangalore SEZ Limited
Address	Survey No 168/3A | Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142
Sample Collected By	**OneEarth** Enviro Labs
Sampling Location	**L1 – Near WTP**
Date of Sample Receipt	On site
Method Adopted	IS:9989.1981
Sampling Details	Noise Level Monitoring Day and Night

SL NO	Date	Time	Parameters			KSPCB Limits
			Min	Leq	Max	
1	22/09/2020	1115		54.0		
2		1215		68.4		
3		1315		46.9		
4		1415		62.2		
5		1515		51.5		
6		1615		52.6		
7		1715		48.6		75dB
8		1815		44.2		
9		1915		68.5	68.5	
10		2015		50.3		
11		2145		44.78		
12		2215		43.88		
13		2315		48.9		
14	23/09/2020	0015		35.8		70dB
15		0115	32.8	32.8		
16		0215		36.3		

Leq – Arithmetically mean value in a period of set time

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

** End of the Report **

For *OneEarth* Enviro Labs

One Earth Enviro Labs PHONE 2409011

Authorised Signatory
(Murlidhar S M, Quality Manager)

Note : 1. The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: N/2020/0124-2
Report Date:30/10/2020

AMBIENT NOISE LEVEL MONITORING REPORT

Name of the Industry	M/s Mangalore SEZ Limited
Address	Survey No 168/3A | Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142
Sample Collected By	**OneEarth** Enviro Labs
Sampling Location	**L2 – Near CETP**
Date of Sample Receipt	On site
Sampling Details	Noise Level Monitoring Day and Night
Method Adopted	IS:9989.1981

SL NO	Date	Time	Parameters			KSPCB Limits
			Min	Leq	Max	
1	23/09/2020	1045		65.35		
2		1145		63.0		
3		1255		72.5		
4		1345		70.9		
5		1445		67.2		
6		1545		74.5	74.5	
7		1645		61.89		**75dB**
8		1745		64.2		
9		1845		60.86		
10		1945		67.3		
11		2045		52.5		
12		2145		58.4		
13		2245		56.8		
14		2345		44.7		
15	24/09/2020	0045	41.6	41.6		**70dB**
16		0145		51.6		

Leq – Arithmetically mean value in a period of set time

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

** End of the Report **

For OneEarth Enviro Labs

Authorised Signatory
(Murlidhar S M, Quality Manager)

Note : 1. The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only 5. Total liability of our lab is limited to the Invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: N/2020/0124-3
Report Date:30/10/2020

AMBIENT NOISE LEVEL MONITORING REPORT

Name of the Industry	M/s Mangalore SEZ Limited
Address	Survey No 168/3A | Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142
Sample Collected By	**OneEarth** Enviro Labs
Sampling Location	**L1 - Near WTP**
Date of Sample Receipt	On site
Sampling Details	Noise Level Monitoring Day and Night
Method Adopted	IS:9989.1981

SL NO	Date	Time	Parameters			KSPCB Limits
			Min	Leq	Max	
1	29/09/2020	1030		66.8	66.8	75dB
2		1130		58.6		
3		1230		61.4		
4		1330		55.4		
5		1430		61.3		
6		1530		48.9		
7		1630		56.8		
8		1730		45.6		
9		1830		49.4		
10		1930		60.2		
11		2030		55.0		
12		2130		44.7		
13		2230		45.8		
14		2330		40.6		
15	30/09/2020	0030		35.5		70dB
16		0130	32.3	32.3		
17		0220		32.7		

Leq – Arithmetically mean value in a period of set time

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

** End of the Report **

For *OneEarth* Enviro Labs

Authorised Signatory
(Murlidhar S M, Quality Manager)

Note : 1. The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: N/2020/0124-4
Report Date:30/10/2020

AMBIENT NOISE LEVEL MONITORING REPORT

Name of the Industry	M/s Mangalore SEZ Limited
Address	Survey No 168/3A	Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142
Sample Collected By	**OneEarth** Enviro Labs
Sampling Location	**L2 - Near CETP**
Date of Sample Receipt	On site
Sampling Details	Noise Level Monitoring Day and Night
Method Adopted	IS:9989.1981

SL NO	Date	Time	Parameters			KSPCB Limits
			Min	Leq	Max	
1	30/09/2020	1045		70.6		
2		1145		66.4		
3		1245		72.8	72.8	
4		1345		62.2		
5		1445		60.5		
6		1545		59.9		
7		1645		57.9		**75dB**
8		1745		52.4		
9		1845		50.2		
10		1945		48.8		
11		2045		59.5		
12		2145		50.3		
13		2245		54.1		
14		2345		48.4		
15	01/10/2020	0045		44.4		**70dB**
16		0145	40.2	40.2		

Leq – Arithmetically mean value in a period of set time

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

** End of the Report **

For OneEarth Enviro Labs

Authorised Signatory
(Murlidhar S M, Quality Manager)

Note : 1. The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: N/2020/0124-5
Report Date:30/10/2020

AMBIENT NOISE LEVEL MONITORING REPORT

Name of the Industry	M/s Mangalore SEZ Limited
Address	Survey No 168/3A | Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142
Sample Collected By	**OneEarth Enviro Labs**
Sampling Location	**L1 - Near WTP**
Date of Sample Receipt	On site
Sampling Details	Noise Level Monitoring Day and Night
Method Adopted	IS:9989.1981

SL NO	Date	Time	Parameters			KSPCB Limits
			Min	Leq	Max	
1	06/10/2020	1040		60.3		
2		1140		61.4		
3		1240		59.8		
4		1340		58.78		
5		1440		63.2	63.2	
6		1540		57.4		
7		1640		59.1		**75dB**
8		1740		50.5		
9		1840		47.4		
10		1940		62.5		
11		2040		54.8		
12		2140		42.6		
13		2240		48.5		
14		2340		35.8		
15	07/10/2020	0040	32.4	32.4		**70dB**
16		0140		35.5		
17		0240		36.8		

Leq – Arithmetically mean value in a period of set time

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

** End of the Report **

One Earth Enviro Labs PHONE 2409011 Mangaluru - 575 011

For *OneEarth* Enviro Labs

Authorised Signatory
(Murlidhar S M, Quality Manager)

Note : 1. The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: N/2020/0124-6
Report Date:30/10/2020

AMBIENT NOISE LEVEL MONITORING REPORT

Name of the Industry	M/s Mangalore SEZ Limited
Address	Survey No 168/3A | Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142
Sample Collected By	**OneEarth** Enviro Labs
Sampling Location	**L2 - Near CETP**
Date of Sample Receipt	On site
Sampling Details	Noise Level Monitoring Day and Night
Method Adopted	IS:9989.1981

SL NO	Date	Time	Parameters			KSPCB Limits
			Min	Leq	Max	
1	07/10/2020	1105		71.8		
2		1205		73.5	73.5	
3		1305		69.8		
4		1405		66.5		
5		1505		64.7		
6		1605		62.9		
7		1705		59.4		75dB
8		1805		55.8		
9		1905		61.8		
10		2005		59.9		
11		2105		58.3		
12		2205		54.1		
13		2305		50.3		
14	08/10/2020	0005		45.5		
15		0105		40.8		70dB
16		0205	39.8	39.8		

Leq – Arithmetically mean value in a period of set time

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

** End of the Report **

For *OneEarth* Enviro Labs

Authorised Signatory
(Murlidhar S M, Quality Manager)

Note : 1. The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: N/2020/0124-7
Report Date:30/10/2020

AMBIENT NOISE LEVEL MONITORING REPORT

Name of the Industry	M/s Mangalore SEZ Limited
Address	Survey No 168/3A | Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142
Sample Collected By	**OneEarth** Enviro Labs
Sampling Location	**L1 - Near WTP**
Date of Sample Receipt	On site
Sampling Details	Noise Level Monitoring Day and Night
Method Adopted	IS:9989.1981

SL NO	Date	Time	Parameters			KSPCB Limits
			Min	Leq	Max	
1	13/10/2020	1055		62.1		
2		1155		60.6		
3		1255		61.6		
4		1355		60.5		
5		1455		65.7	65.7	
6		1555		62.2		
7		1655		58.5		75dB
8		1755		52.5		
9		1855		60.3		
10		1955		50.3		
11		2055		52.2		
12		2155		49.4		
13		2255		45.1		
14		2355		55.4		
15	14/10/2020	0055	32.4	32.4		70dB
16		0155		34.6		
17		0255		30.1		

Leq – Arithmetically mean value in a period of set time

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

** End of the Report **

For *OneEarth* Enviro Labs

Authorised Signatory
(Murlidhar S M, Quality Manager)

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

OEL/A/F/10/03

Certificate No. TC-7847

NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: N/2020/0124-8
Report Date:30/10/2020

AMBIENT NOISE LEVEL MONITORING REPORT

Name of the Industry	M/s Mangalore SEZ Limited
Address	Survey No 168/3A | Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142
Sample Collected By	**OneEarth** Enviro Labs
Sampling Location	**L2 - Near CETP**
Date of Sample Receipt	On site
Sampling Details	Noise Level Monitoring Day and Night
Method Adopted	IS:9989.1981

SL NO	Date	Time	Parameters			KSPCB Limits
			Min	Leq	Max	
1	14/10/2020	1105		71.8		
2		1205		74.4	74.4	
3		1305		69.8		
4		1405		66.5		
5		1505		64.7		
6		1605		62.9		
7		1705		59.4		**75dB**
8		1805		55.8		
9		1905		61.8		
10		2005		59.9		
11		2105		58.3		
12		2205		54.1		
13		2305		50.3		
14	15/10/2020	0005		45.5		
15		0105		40.8		**70dB**
16		0205	37.9	37.9		

Leq – Arithmetically mean value in a period of set time

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

** End of the Report **

For *OneEarth* Enviro Labs

Authorised Signatory
(Murlidhar S M, Quality Manager)

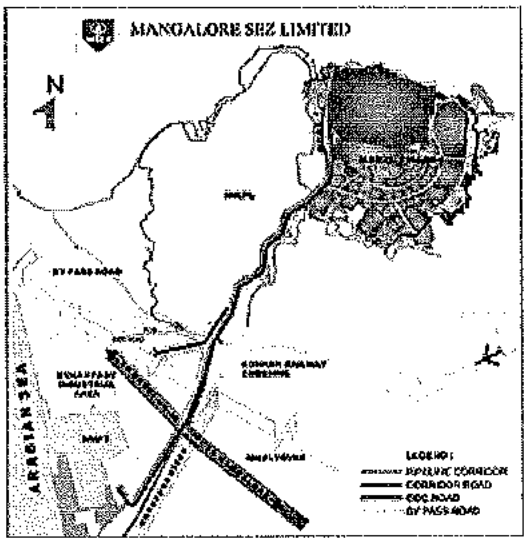
Note : 1. The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

7677/01.12.2020

Mangalore SEZ Limited

ENVIRONMENTAL MONITORING REPORT

AMBIENT AIR QUALITY AND MONITORING REPORT FOR THE MONTH OF Nov 2020



Submitted By

M/s *OneEarth* Enviro Labs
(NABL Accredited, MOEF&CC Recognized Laboratory)
KSIA Building, 1st Floor, Baikampady Industrial Estate, Mangaluru,
Karnataka – 575011 Email: oneearthenviro@gmail.com

INDEX

AMBIENT AIR QUALITY MONITORING REPORT - November 2020

1. INTRODUCTION

Mangalore Special Economic Zone, known as MSEZ is spread across 1638 acres, located 15 km from Mangalore city, off Cochin-Mumbai NH 66, 5 km from Mangalore International Airport and 8 km from all-weather deep draft sea port, New Mangalore Port in Mangalore, Karnataka, India. MSEZ limited is jointly promoted by Oil and Natural Gas Corporation (ONGC), a fortune 500 company & infrastructure leasing & finance services, one of India's leading infrastructure development and finance companies, Karnataka Industrial Area Development Board (KIADB) and Kanara Chamber of Commerce and Industry (KCCI). A unique combination of Government entities, a large financial institution and an apex chamber brings in the expertise to develop MSEZL with world-class industrial infrastructure.

2. ENVIRONMENT MONITORING

Environmental monitoring is being carried out at Mangalore SEZ, following guidelines and regulations of MoEF&CC/CPCB and KSPCB statutory norms. In this regard, MSEZL has awarded the work to M/s *OneEarth* Enviro Labs and to monitor air quality, water quality & noise level for the three years. As per work order, during November 2020, we have conducted ambient air quality at 3 locations.

3. SCOPE AND METHODOLOGY

The scope of work carried out and methodology adopted for the survey are described below:

3.1. Ambient Air Quality

Ambient air quality monitoring was carried out at each location on 24 hour basis on two consecutive days in this month. The identified monitoring locations are: 1- WTP, 2- CETP & 3-Permude Area. To assess the ambient air quality status, monitoring stations are identified on the basis of meteorology in the upwind and downwind direction as well as to represent the cross sectional scenario of the MSEZ. Based on the activities the parameters chosen for assessment of air quality are PM2.5-Particulate matter size less than 2.5 Micron, PM10-Particulate matter size less than 10 Micron; SO_2 Sulphur dioxide; NO_2-Nitrogen-di-oxide; CO-Carbon Mono Oxide (DL 0.1 mg/m^3);O_3-Ozone (DL 10 $\mu g/m^3$);NH_3-Ammonia (DL 5 $\mu g/m^3$); Pb-Lead (DL 0.05 $\mu g/m^3$); As-Arsenic (DL 0.1 ng/m^3); Ni- Nickel (DL 0.5 ng/m^3); Benzene-(DL 1 $\mu g/m^3$); B(α)P- Benzo-α-pyrene(DL 0.1 ng/m^3) as per CPCB stipulation.

3.1.1. Sampling and analysis of PM2.5 and PM10 in ambient air (Gravimetric Method)

i. Check the filter for any physical damages
ii. Mark identification number on the filter
iii. Condition the filter in conditioning room / desiccator for 24 hours
iv. Record initial weight
v. Place the filter on the sampler
vi. Run the sampler for twenty four hours
vii. Record the flow rate on hourly basis
viii. Remove the filter from the sampler
ix. Keep the exposed filter in a proper container
x. Record the total time of sampling & average flow rate
xi. Again condition the filter in conditioning room / desiccator for 24 hours
xii. Record final weight

Laboratory analysis:

Weighing of exposed samples:

Calculate the concentration of PM10 or PM2.5 in $\mu g/m^3$

Calculations:

i. Average flow rate (initial and final flow rates) in L/ min
= (Initial flow rate + final flow rate)/ 2

ii. Total vol. of air sampled (TVA) in m^3
= Avg. flow rate (*L/min*) * 10^{-3} (m^3/L) * sampling time (*hr*) * 60 (*min/hr*)

iii. Concentration of PM in $\mu g/m^3$
= $(w_f - w_i)$ *(mg)*/ TVA (m^3) * $10^6 \mu g/m^3$ *where* w_i *=initial &* w_f*=final weight of the filter paper*

3.1.2. Sampling and analysis of Sulphur dioxide

i. Place 30 ml of absorbing media in an impinger
ii. Connect it to the gas-sampling manifold of gas sampling device (RDS/ HVS).
iii. Draw air at a sampling rate of 1 lpm (litre per minute) for four hours
iv. Check the volume of sample at the end of sampling and record it
v. Transfer the exposed samples in storage bottle and preserve
vi. Prepare calibration graph as recommended in method
vii. Take 10/20 ml. aliquot of sample in 25 ml. Vol. Flask
viii. Take 10/20 ml. of unexposed sample in 25 ml. Vol. Flask (blank)
ix. Add 1 ml Sulphamic acid. Keep it 10 minutes
x. Add 2 ml formaldehyde
xi. Add 2 ml working PRA
xii. Make up to mark (25 ml.) with distilled water.

xiii. Keep it 30 minutes for reaction
xiv. Set Zero of spectrophotometer with Distilled water
xv. Measure absorbance at 560 nm
xvi. Calculate concentration using calibration graph
xvii. Calculate concentration of Sulphur Dioxide in $\mu g/m^3$

3.1.3. Sampling and analysis of Nitrogen-di-oxide

i. Place 30 ml of absorbing media in an impinger
ii. Connect it to the gas sampling manifold of gas sampling device (RDS/HVS).
iii. Draw air at a sampling rate of 1 lpm for four hours
iv. Check the volume of sample at the end of sampling and record it
v. Transfer the exposed samples in storage bottle and preserve
vi. Prepare calibration graph as recommended in method
vii. Take 10 ml. aliquot of sample in 50 ml. Vol. Flask
viii. Take 10 ml. of unexposed sample in 50 ml. Vol. Flask (blank)
ix. Add 1 ml hydrogen peroxide
x. Add 10 ml sulphanilamide
xi. Add 1.4 ml NEDA
xii. Make up to mark (50 ml.) with distilled water.
xiii. Keep it 10 minutes for reaction
xiv. Set Zero of spectrophotometer with Distilled water
xv. Measure absorbance at 540 nm
xvi. Calculate concentration using calibration graph
xvii. Calculate concentration of Nitrogen Dioxide in $\mu g/m^3$

3.1.4. Sampling and analysis of Carbon Mono Oxide

Using Gas analyzer or by Gas detector tube or by portable GAS Detector calibrated against NIST Certified Gas cylinders of known concentration.

Gas Analyzer

Preparation of sample train:

I. Sampling begins with conditioning a sampling train and then gas analyzer
ii. Pressure system is preferred to condition the sampling train by installing pump before the analyzer. Reducing valve needs to be fitted between the analyser and pump to eliminate the pulsing effect of pump on the analyzer
iii. Flow meter is to be installed just before the analyzer
iv. A fibre filter is used to capture the particulate matter prior to the optical cell to prevent its interference. As it often accumulates on the optical cell reducing the efficiency
v. To eliminate the interference of water vapour, refrigeration or desiccant with magnesium perchlorate could be used

Mode of operation:

i. Continuous analysis is carried out at the flow rate of about 100 ml/min to 1000 ml/min (depending upon the level of pollution near the location) for the desired sampling period

ii. Discrete sampling could also be possible with infra red analyzer. It however requires proper cleaning of the sampling train.

Gas detector tube

Mode of operation:

1. At the flow rate of about 100 ml/min using hand held pump draw 250ml of air sample into the tube.
2. Based on colour indicator, concentration of CO is determined.

Steps:

i. Calibration of Gas Tube detector can be carried out using NIST Certified CO gas of known concentration

ii. Sampler is allowed to warm up for some time before drawing the sample and temperature stability

Portable CO GAS Detector

Mode of operation:

1. Switch on the CO GAS meter and wait for some time for meter to get adjusted to the environmental conditions
2. Once steady CO Concentration is displayed note down the display.

Steps:

i. Calibration of Gas detector meter to be carried out using NIST Certified CO gas of known concentration

ii. Sampler is allowed to warm up for some time before drawing the sample and temperature stability

3.1.5 Sampling and analysis of Ozone

i. Place10 ml of absorbing media in an impinger

ii. Connect it to the gas sampling manifold of gas sampling device (RDS/HVS).

iii. Draw air at a sampling rate of 1 lpm for 60 minutes

iv. Do not expose the absorbing reagent to direct sunlight

v. Add de ionized water to make up the evaporation loss during sampling and bring the volume to 10 ml

vi. Prepare calibration graph as recommended in method

vii. Within 30 to 60 minutes after sample collection, read the absorbance in a cuvette at352 nm against a reference cuvette containing de ionized water

viii. Calculate concentration using calibration graph

ix. Calculate concentration of Ozone in $\mu g/m^3$

3.1.6 Sampling and analysis of Ammonia

i. Dilute 10ml of concentrated HCl (12 M) to 100 ml with distilled water. Wash the glassware with the water and finally rinse it thrice with distilled water

ii. Adjust the Flow rate at 1L/min of the rotameter and the manifolds of the attached APM 411/APM 460 Dx

iii. Place 10 ml of absorbing media in each midget impinger for samples and field blanks. Assemble (in order) prefilter & holder, flow meter, impinger and pump. Sample at the rate of 1L/min for 1 hour duration

iv. Record the sampling time, average flow rate and final volume of the solution. After the sample collection, transfer the solution in the impinger to polyethylene bottle and recap it tightly for transport to laboratory for analysis

v. Prepare the absorbing media, various reagents and working solutions as per the method described in protocol. Standardize the sodium thiosulphate solution by titrating it against potassium iodate and Sodium hypochlorite by titrating it against standardized sodium thiosulphate solution

vi. Take 25 ml measuring flasks and rinse with distilled water. Transfer the contents from polyethylene bottles to 25 ml measuring flasks (Maintain all the solutions at 25°C). Add 2 ml of buffer (to maintain pH). Add 5 ml of working phenol solution, mix, fill to about 22 ml with distilled water and then add 2.5 ml of working hypochlorite solution & mix rapidly. Store in the dark for 30 mins to develop colour. Measure the absorbance of the solution at 630 nm using UV Spectrophotometer

vii. Pipette 0.5, 1.0 and 1.5 ml of working standard solution (working ammonia solution) in 25 ml measuring flasks. Fill to 10 ml mark with absorbing solution (0.1 M H_2SO_4). Add the reagents as to each flask as in the procedure for analysis. Read the absorbance of each standard against the reagent blank.

viii. Plot the calibration curve

ix. Calculate the concentration of NH_3 in $\mu g/m^3$

3.1.7. Sampling and analysis of Lead, Nickel, Arsenic:

1. Sampling procedure:

Tilt back the inlet and secure it according to manufacturer's instructions. Loosen the face-plate wing-nuts and remove the face plate. Remove the filter from its jacket and centre it on the support screen with the rough side of the filter facing upwards. Replace the face-plate and tighten the wing-nuts to secure the rubber gasket against the filter edge. Gently lower the inlet. For automatically flow-controlled units, record the designated flow rate on the data sheet. Record the reading of the elapsed time meter. The specified length of sampling is commonly 8 hours or 24 hours. During this period, several reading (hourly) of flow rate should be taken. After the required time of sampling, record the flow meter reading and take out the filter media from the sampler and put in a container or envelope

2. Analysis:

i. Hot plate procedure:

Cut a 1" x 8" strip or half the filter from the 8" x 10" filter using a stainless steel pizza cutter. Place the filter in a beaker using vinyl gloves or plastic forceps. Cover the filter with the extraction solution (3% HNO_3& 8% HCl). Place beaker on the hotplate, contained in a fume hood, and reflux gently while covered with a watch glass for 30 min. Do not allow sample to dry. Remove the beakers from the hot-plate and allow to cool. Rinse the beaker walls and wash with distilled water. Add approximately 10 mL reagent water to the remaining filter material in the beaker and allow to stand for at least 30 min. Transfer the extraction fluid in the beaker to a 100 mL volumetric flask or other graduated vessel. Rinse the beaker and any remaining solid material with distilled water and add the rinses to the flask. Dilute to the mark with distilled water (Type I) water and shake. The final extraction solution concentration is 3 % HNO_3/ 8% HCl. The filtered sample is now ready for analysis

2.1. Analysis of samples:

i. Instrument / Equipment:

A light beam containing the corresponding wavelength of the energy required to raise the atoms of the analyte from the ground state to the excited state is directed through the flame or furnace. This wavelength is observed by a monochromator and a detector that measure the amount of light absorbed by the element, hence the number of atoms in the ground state in the flame or furnace. A hollow cathode lamp for the element being determined provides a source of that metal's particular absorption wavelength. The method describes both flame atomic absorption (FAA) spectroscopy and graphite furnace atomic absorption (GFAA) spectroscopy. Atomic Absorption Spectrophotometer - analyze the metals by Flame; if results are below detection limit then go for GTA. Arsenic is analyzed by Flame - VGA.

ii. Flame Procedure:

Set the atomic absorption spectrophotometer for the standard condition as follows: choose the correct hollow cathode lamp, align the instrument, position the monochromator at the value recommended by the manufacturer, select the proper monochromator slit width, set the light source current, ignite the flame, regulate the flow of fuel and oxidant, adjust the burner for maximum absorption and stability and balance the meter. Run a series of standards of the metal of interest and construct a calibration curve. Aspirate the blanks and samples. Dilute samples that exceed the calibration range. For Lead (Pb) and Nickel (Ni), the wavelength required for analysis is 217 nm and 232 nm respectively. Where as in case of Arsenic (As), the VGA should attach with Flame and the wavelength required for analysis is 193.7nm.

3. Calibration:

Prepare standard solutions from the stock solutions. Select at least three standards to cover linear range as recommended by method. Aspirate the standards into the flame or inject the standards into the furnace and record the absorbance. Prepare the calibration graph by plotting absorbance and concentration in µg/ml.

i. Preparation of Standards:

For each metal that is to be determined, standards of known concentration must be acquired commercially certified standards.

ii. Standard Curve:

Standard curve is prepared by using standard solutions of known concentration.

4. Calculations:

i. Sample Air Volume:

Sample air volume can be calculated by using the following equation:

$V = (Q)\ (t)$

Where,

V = volume of air, m^3

Q = average sampling rate, m3/min.

t = time in minutes.

ii. Metal Concentration:

$C = (Ms - Mb) \times Vs \times Fa/V \times Ft$

Where,

C = concentration, µg metal/m^3
Ms = metal concentration µg/mL
Mb = blank concentration µg/mL
Vs = total volume of extraction in mL
Fa = total area of exposed filter in cm^2
V = Volume of air sampled in m^3
Ft = Area of filter taken for digestion in cm^2

3.1.8. Sampling and analysis of Benzo-α-pyrene:

Benzo (a) Pyrene (BaP) is one of the most important constituent of PAH compounds and also one of the most potent carcinogens. This can be measured in both particulate phase and vapour phase. In the vapour phase the concentration of B(a)P is significantly less than the particulate phase. Therefore, more care to be taken for the measurement of Benzo (a) Pyrene in the particulate phase. The molecular formula of B(a)P is C_20H_{12} having molecular weight of 252.

It is based on BIS method IS 5182 (Part 12):2004 and USEPA method (TO-13). This method is designed to collect particulate phase PAHs in ambient air and fugitive emissions and to determine individual PAH compounds using capillary gas chromatograph equipped with flame ionization detector. It is a high volume (1.2m^3/min) sampling method capable of detecting sub.ng/m^3 concentration of PAH in 24 hours sample (i.e. collected in 3 shifts of 8 hour each with 480 m^3 sampling volume of air).

i. Sampling:

i. Instrument/Filter Selection:

24 hr. sampling using PM_{10} high volume sampler with 8 hourly samples using EPM-2000 glass fibre or equivalent filter

ii. Sample Analysis

a. Extraction:

Filter papers (half of all the filters papers collected in a day) are cut into strips using scissors and transfer to 250 ml beaker. Add ~50 ml. of Toluene (GC/HPLC grade). These samples are extracted with toluene using ultra sonic sample can be extracted using Soxhlet bath for about 30 minutes. Repeat the procedure twice (50ml x 2 times) for complete extraction. Alternatively, extraction apparatus for about 8 hr. with Toluene and repeat it twice.

b. Filtration:

Filter the extracted samples with Whatman filter paper No.41 containing 2 gm of Anhydrous Sodium Sulphate (to remove moisture).

c. Concentration:

After filtration, the filtrate is concentrated using Rotary vacuum evaporator to 2ml final volume.

d. Clean-up with silica Gel:

To clean up the impurities, pass 2 ml of concentrated sample through silica gel column (pre conditioned, 60-80 mesh, and 200-250mm×10 mm with Teflon stopcock). After cleaning add 5ml cyclohexane and collect the elute in 25 ml beaker. Repeat the process for at least 3 times and collect it in the same beaker. Alternatively Solid Phase Extraction (SPE) could be used for clean up the impurities of sample.

e. Re-concentration with rotary vacuum evaporator:

The Cleaned up extract/filtrate (approximately 17 ml) is further concentrated using rotary evaporator and it is evaporated to nearly dryness with Nitrogen.

f. Final Sample volume:

The dried sample is re-dissolved in 1ml of toluene and transfer into 4 or 5 ml amber vials final analysis.

ii. Calculations:

Calculate the concentration in ng/µL of each identified analyte or B(a)P in the sample extract (Cs) as follows:

Calculate the air volume from the periodic flow reading taken during sampling using the following equation:

$V = Q \times T$

Where,

Q =Average flow rate of sampling m^3/min

T = sampling time, in min.

V = total sample volume at ambient conditions in m^3

Concentration of analyte i.e B(a)P:

The concentration of PAH compound or Benzo(a)pyrene in ng /m^3 in the air sampled is given by:

C (ng /m3) = Cs * Ve / Vi *Vs

Where,

Cs : Concentration of Benzo (a) pyrene in ng / µL in the sample extract recorded by GC.

Ve : Final volume of extract in µL (i.e 1000)

Vi : Injection Volume (i.e 1µL)

Vs : Volume of air sample in m^3

@

4. MONITORING SCHEDULE OF MANGALORE SEZ LIMITED ENVIRONMENTAL MONITORING

Sl.No	Environmental Attributes monitored	Parameters analyzed and presented in analysis Report	Monitoring requirement
1	Ambient Air Quality	PM2.5, PM10, SO_2, NO_2, CO, O_3, NH_3, Pb, As, Ni, Benzene, B(α)P	3 Locations/Month, 24 hrs/day consecutive 2 days
2	Surface/ Ground Water Quality	Colour, pH (at 25 °C), Odour, Taste, Turbidity, Total Dissolved Solids, Alkalinity as $CaCO_3$,Total Hardness, Calcium as Ca, Magnesium as Mg, Iron as Fe, Sulphate as SO_4, Chloride as Cl, Boron as B, Residual free chlorine, Fluoride, Phenolic Compounds, Manganese as Mn, Zinc as Zn, Arsenic as As, Cyanide as CN, Cadmium as Cd, Chromium as Cr, Aluminium as Al, Selenium as Se, Lead as Pb, Mercury as Hg, Nitrate Nitrogen NO_3, *E.Coli*	Ten Locations, Season wise (Summer, Winter, Post monsoon), By using grab sampling technique
3	Ambient Noise Level	Noise Level (dB) in Day and Night	Two Locations, two non consecutive days per week, for two weeks and Season wise (Summer, Winter, Post monsoon)

@

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: A/2020/0333
Report Date: 27/11/2020

AMBIENT AIR QUALITY ANALYSIS REPORT

Name	M/s Mangalore SEZ Limited		
Address	Survey No 168/3A | Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142		
Sample Collected By	OneEarth Enviro Labs		
Sampling Location	CETP		
Date of Sampling	19/11/2020 to 20/11/2020	Analysis Start Date	19/11/2020
Date of Sample Receipt	19/11/2020, 20/11/2020	Analysis End Date	27/11/2020
Sampling Details	Ambient Air Quality Monitoring for 24 Hrs		
Humidity %	69.00	Temp °C 32.1°C	Pressure mmHg 757.04

Sl. No	Date & Time / Location / Parameters	19/11/2020 0945 / 333 / Result (µg/m³)	NAAQ STD	Protocol
1	Respirable Particulate Matter PM2.5	26.62	60	IS 5182 : Part 24
2	Respirable Particulate Matter PM10	95.33	100	IS 5182 : Part 23
3	SPM	6.87	500	IS 5182 : Part 4
4	Sulphur Dioxide SO_2	BDL	80	IS 5182 : Part 2
5	Nitrogen Dioxide NO_2	BDL	80	IS 5182 : Part 6
6	Ozone O_3	ND	180	IS 5182 : Part 9
7	Ammonia NH_3	BDL	400	IS 5182 : Part 25
8	Carbon Monoxide CO (mg/m^3)	ND	4	Gas Detector
9	Lead Pb	ND	1	IS 5182 : Part 22
10	Arsenic As (ng/m3)	ND	6	CPCB Guidelines
11	Nickel Ni (ng/m3)	ND	20	IS 5182 : Part 26
12	Benzene C6H6	ND	5	IS 5182 : Part 11
13	Benzo (a) pyrine BaP (ng/m3)	ND	1	IS 5182 : Part 12

BDL-Below Detection Limit ND-Not Detectable DL-Detection Limit BDL for SO_2 - 4 µg/m³ & NO_2 - 9.4µg/m³
µ-micro n-nano g-gram

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

For OneEarth Enviro Labs

Authorized Signatory
(Murlidhar S M, Quality Manager)

Note: 1.The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Samples will be destroyed after fifteen days from the date of issue of test reports unless otherwise specified. Perishable samples are not retained. 4. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only. 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: A/2020/0335
Report Date: 27/11/2020

AMBIENT AIR QUALITY ANALYSIS REPORT

Name	M/s Mangalore SEZ Limited		
Address	Survey No 168/3A	Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142	
Sample Collected By	OneEarth Enviro Labs		
Sampling Location	**CETP**		
Date of Sampling	20/11/2020 to 21/11/2020	Analysis Start Date	20/11/2020
Date of Sample Receipt	20/11/2020, 21/11/2020	Analysis End Date	27/11/2020
Sampling Details	Ambient Air Quality Monitoring for 24 Hrs		

Humidity %	89.40	Temp °C	30°C	Pressure mmHg	756.74

Sl. No	Date & Time / Location / Parameters'	20/11/2020 1015 / 335 / Result (µg/m³)	NAAQ STD	Protocol
1	Respirable Particulate Matter PM2.5	33.33	60	IS 5182 : Part 24
2	Respirable Particulate Matter PM10	83.98	100	IS 5182 : Part 23
3	SPM	8.77	500	IS 5182 : Part 4
4	Sulphur Dioxide SO_2	BDL	80	IS 5182 : Part 2
5	Nitrogen Dioxide NO_2	BDL	80	IS 5182 : Part 6
6	Ozone O_3	104.41	180	IS 5182 : Part 9
7	Ammonia NH_3	ND	400	IS 5182 : Part 25
8	Carbon Monoxide CO (mg/m³)	ND	4	Gas Detector
9	Lead Pb	ND	1	IS 5182 : Part 22
10	Arsenic As (ng/m3)	ND	6	CPCB Guidelines
11	Nickel Ni (ng/m3)	ND	20	IS 5182 : Part 26
12	Benzene C6H6	ND	5	IS 5182 : Part 11
13	Benzo (a) pyrine BaP (ng/m3)	ND	1	IS 5182 : Part 12

BDL-Below Detection Limit ND-Not Detectable DL-Detection Limit BDL for SO_2 - 4 µg/m³ & NO_2 - 9.4µg/m³
µ-micro n-nano g-gram

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

One Earth Enviro Labs PHONE 2409011 Mangaluru - 575 011

For OneEarth Enviro Labs

Authorized Signatory
(Murlidhar S M, Quality Manager)

Note: 1.The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Samples will be destroyed after fifteen days from the date of issue of test reports unless otherwise specified. Perishable samples are not retained. 4. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only. 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: A/2020/0334
Report Date: 27/11/2020

AMBIENT AIR QUALITY ANALYSIS REPORT

Name	M/s Mangalore SEZ Limited		
Address	Survey No 168/3A	Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142	
Sample Collected By	OneEarth Enviro Labs		
Sampling Location	**WTP**		
Date of Sampling	19/11/2020 to 20/11/2020	Analysis Start Date	19/11/2020
Date of Sample Receipt	19/11/2020, 20/11/2020	Analysis End Date	27/11/2020
Sampling Details	Ambient Air Quality Monitoring for 24 Hrs		
Humidity % 69.00	Temp °C 32.1°C	Pressure mmHg	757.04

Sl. No	Date & Time / Location / Parameters	19/11/2020 1015 / 334 / Result (µg/m³)	NAAQ STD	Protocol
1	Respirable Particulate Matter PM2.5	40.70	60	IS 5182 : Part 24
2	Respirable Particulate Matter PM10	72.70	100	IS 5182 : Part 23
3	SPM	5.46	500	IS 5182 : Part 4
4	Sulphur Dioxide SO_2	BDL	80	IS 5182 : Part 2
5	Nitrogen Dioxide NO_2	BDL	80	IS 5182 : Part 6
6	Ozone O_3	ND	180	IS 5182 : Part 9
7	Ammonia NH_3	ND	400	IS 5182 : Part 25
8	Carbon Monoxide CO (mg/m³)	ND	4	Gas Detector
9	Lead Pb	ND	1	IS 5182 : Part 22
10	Arsenic As (ng/m3)	ND	6	CPCB Guidelines
11	Nickel Ni (ng/m3)	ND	20	IS 5182 : Part 26
12	Benzene C6H6	ND	5	IS 5182 : Part 11
13	Benzo (a) pyrine BaP (ng/m3)	ND	1	IS 5182 : Part 12

BDL-Below Detection Limit ND-Not Detectable DL-Detection Limit BDL for SO_2 - 4 µg/m³ & NO_2 - 9.4µg/m³
µ-micro n-nano g-gram

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

For OneEarth Enviro Labs

Authorized Signatory
(Murlidhar S M, Quality Manager)

Note: 1.The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Samples will be destroyed after fifteen days from the date of issue of test reports unless otherwise specified. Perishable samples are not retained. 4. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only. 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

OneEarth Enviro Labs

1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

Certificate No. TC-7847
NABL ISO/IEC 17025:2005

ISO 9001:2015 | OHSAS 18001:2007 CERTIFIED | MOEF & CC RECOGNISED

Report No: A/2020/0336
Report Date: 27/11/2020

AMBIENT AIR QUALITY ANALYSIS REPORT

Name	M/s Mangalore SEZ Limited		
Address	Survey No 168/3A | Plot No U-1, Administrative Building ,MSEZ, Bajpe Village, Mangalore Taluk, Karnataka 574142		
Sample Collected By	OneEarth Enviro Labs		
Sampling Location	**WTP**		
Date of Sampling	20/11/2020 to 21/11/2020	Analysis Start Date	20/11/2020
Date of Sample Receipt	20/11/2020, 21/11/2020	Analysis End Date	27/11/2020
Sampling Details	Ambient Air Quality Monitoring for 24 Hrs		

Humidity %	89.40	Temp °C	30°C	Pressure mmHg	756.74

Sl. No	Date & Time / Location / Parameters	20/11/2020 1130 / 336 / Result (µg/m³)	NAAQ STD	Protocol
1	Respirable Particulate Matter PM2.5	25.79	60	IS 5182 : Part 24
2	Respirable Particulate Matter PM10	96.38	100	IS 5182 : Part 23
3	SPM	5.21	500	IS 5182 : Part 4
4	Sulphur Dioxide SO_2	BDL	80	IS 5182 : Part 2
5	Nitrogen Dioxide NO_2	BDL	80	IS 5182 : Part 6
6	Ozone O_3	87.78	180	IS 5182 : Part 9
7	Ammonia NH_3	ND	400	IS 5182 : Part 25
8	Carbon Monoxide CO (mg/m^3)	ND	4	Gas Detector
9	Lead Pb	ND	1	IS 5182 : Part 22
10	Arsenic As (ng/m3)	ND	6	CPCB Guidelines
11	Nickel Ni (ng/m3)	ND	20	IS 5182 : Part 26
12	Benzene C6H6	ND	5	IS 5182 : Part 11
13	Benzo (a) pyrine BaP (ng/m3)	ND	1	IS 5182 : Part 12

BDL-Below Detection Limit ND-Not Detectable DL-Detection Limit BDL for SO_2 - 4 µg/m³ & NO_2 - 9.4µg/m³
µ-micro n-nano g-gram

Opinion	As per Standards mentioned in the report. Report Status: - The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

One Earth Enviro Labs PHONE 2402011 Mangaluru - 575 011

For OneEarth Enviro Labs

Authorized Signatory
(Murlidhar S M, Quality Manager)

Note: 1.The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected/received. 3. Samples will be destroyed after fifteen days from the date of issue of test reports unless otherwise specified. Perishable samples are not retained. 4. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only. 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.

ओएनजीसी मंगलूर पेट्रोकेमिकल्स लिमिटेड
(मंगलूर रिफाइनरी एण्ड पेट्रोकेमिकल्स लिमिटेड की सहायक कंपनी)

ONGC Mangalore Petrochemicals Limited

(A Subsidiary of Mangalore Refinery and Petrochemicals Limited)

(भारत सरकार का एक उद्यम)
(A Government of India Enterprise)

एमएसईज़ेड, पेर्मुदे, मंगलूरु – ५७४ ५०९. MSEZ, Permude, Mangaluru - 574 509.

CIN : U40107KA2006GOI041258 दूरभाषा Tel.: 0824-2872000, फैक्स Fax: 0824-2872005. Website: www.ompl.co.in

REF: OMPL/MoEFCC/SP/2020-21

Date: 01-12-2020

To:

The Head- Technical
MSEZL, Mangalore

Mangalore SEZ Ltd. – 7678
Documents & Contents subject to verification
Received date: 01.12.2020
Received by .... V.R.Shetty

Dear Sir,

Sub: Submission of Half Yearly Compliance Reports of OMPL under Environmental Clearance for Phase-I, MSEZ project, (Including Aromatic Complex) for the period from April, 2020 to September, 2020

With reference to the above, please find enclosed herewith, Half Yearly Compliance Reports of OMPL, for compilation at your end and submission to the concerned Authority under intimation to our office.

Thanking You,

Shivaprakash
Sr. Manager- HE

Vinaykumar
Check & Send for any variance
08/12/2020

CC: **CEO**, OMPL for info
COO, OMPL for info.
DGM- Production, OMPL for info

ANNEXURE-1

Compliance to Charter on Corporate Responsibility for Environmental Protection (CREP)

Sl. No.	Conditions	Compliance
1	**Adoption of state-of- art technology** State of Art technology will be adopted for both process technology as well sound engineering practices required for control of emission, at the stage of design itself in case of new plants	*Please note Process technology is licensed from renowned expert in the field: UOP, America for NHT platforming units, High severity Cyclemax CCR unit for catalyst regeneration, Energy efficient column design for Xylene & BTF units, ISOMER & TADP units for getting high yield of paraxylene per unit of Naptha processed & an efficient, selective PAREX process for paraxylene recovery to get high purity product are considered in the design stage. Also Low NOx burner design for heaters, Low sulphur fuel including provision for usage of Natural Gas are considered.*
2	**Management of storm water** For the storm water generated from process area and tank farm area during initial hours of rain. An arrangement will be made for collection and oil separation including further treatment as required. Such arrangement will include provision for buffer tank (holding tank) and monitoring of effluent quality. This will be accomplished by June 2003.	*Please note OMPL has commissioned 2 numbers of collection tanks: one at ISBL area with capacity of 12,000 m3 & the other at OSBL area with 6000 m3 capacity for collection of initial hours of rain from process area & tank farm area respectively. This is then treated in ETP with an treatment capacity of 150 m3/ hr. The treatment section includes Physical treatment, chemical, Biological & Tertiary treatment sections*
3	**Effective detoxification and waste water treatment scheme** In order to control high COD and persistent organic pollution including toxic constituents, the industry will select appropriate unit operations for pre- treatment of effluent within inside battery limit (ISBL) before sending to the biological treatment system(BTS) for better functioning of ETPs. Action plan for the same will be submitted within 6 months and implemented within one year (March,2004)	*OMPL has installed Effluent Pre-Treatment Plant at a cost of RS 11.39 crores. The units consists of Distillation column & carbon adsorption beds to remove CODs, so that effluent entering BTS will be having Max. upto 20 ppm of aromatics*
4	**Control of emission from combustion** The industry will submit an action plan within six months for improving thermal efficiency and control of Nox	*OMPL has installed Low Nox burners for its heaters & flue gas is let out just above H2SO4 dew point after heating the incoming fuel, air or Steam production in HRSG as the case may be, for improving thermal inspection*
5	**Proper functioning of point source emission control systems** The industry will make efforts for proper operation of pollution control system (mostly scrubbers) and attainment of desired efficiency within six months. The will include backup of power supply to the control equipment and arrangement for frequent sampling and analysis of all critical pollution in the tail gases	*NA*
6	**Leak detection and repair (LDAR) programme** As a good operating, the industry will adopt periodically leak detection and repair (LDAR) programme to check fugitive emissions within six months. The frequency of the programme will be proportionate to the risk potential of carrying fluid. Based on leak detection as per LDAR programme, action will be taken to eliminate fugitive emissions, this will be a continuous activity.	*LDAR program is ongoing process since July, 2016. Please note OMPL as first step in leak prevention, hired Bell Energy India, who carried out Dispersion Model Analysis and recommended following Online detectors which are already installed at site such as, Benzene Detectors 27 nos, Hydrocarbon Detectors 193 nos*
7	**Handling of halogenated organics** The industry will submit an action plan within 6 months to ensure that no halogenated organics is sent to the flares in order to avoid formation of persistent organic pollutants. All HAPs had halongenated organics will be routed to the incineration system having end-on pollution control facility.	*Halogenated organic is used only for chloride dispersion on platinum catalyst and consumed. Used catalyst will be disposed to KSPCB authorised recyclers*
8	**Control of fugitive emissions of carcinogenic compounds** Fugitive emission of carcinogenic compounds (e.g Benzene) will be controlled by closed vapor collection and recovery system. Measures will be taken to monitor health of the workers	*Please note double mechanical seal is provided for the purpose & periodical health check up is being carried out as per the legal requirement through Occupational Health Centre, stagewise*
9	**Management of solid waste** Proper facilities will be provided for handling and storage of hazardous waste with manifest system in case transported to other places. For incinerable waste, properly designed incinerator will be installed within the premises or as a common facility. The non-incinerable hazardous waste should be disposed of in a secure-land fill.	*OMPL has installed Solid Waste Management facility at an estimated cost of RS 3.73 crore for handling and storage of hazardous waste until disposal & manifest system will be follwed during disposal of Hazardous Wastes. Temporary Waste Storage facility is constructed of about ~ 2000 m2 area with impervious surface, closed shed and spillage collection (for any washings) & transfer (to ETP) system*

10	**Proper operation of incinerator** Industry will check the design and will adopt sound engineering practices for proper operation of incinerators. Continuous monitoring will be done for operational parameters and specific parameters in tall gas to ensure the efficient functioning. This will be implemented within 3 months.	*NA*
11	**Optimising the inventory of hazardous chemicals** Efforts will be made to optimize the inventory, particularly of hazardous chemicals. Such information will be made available to the Regulatory Agencies (SBCBs) Inspector of Factory & District Collector	*Agreed. Further Petroleum & Explosives Safety Organization (PESO) approvals are being taken for bulk storage of Hazardous chemicals (Petroleum) wherein requirements of the MSIHC Rules, 1989 is considered*
12	**Self- regulation by industry through monitoring and environmental auditing** Industry will go for self- assessment and regulation by conducting environmental auditing regularly, besides having regular monitoring of pollutants in air emission, liquid effluent and receiving environment.	*Environment Monitoring is ongoing process*
13	**Organizational restructuring and accreditation of environmental manager of industry.** For self- evaluation, organizational restructuring will be done and the environmental manager of the industry will be accredited to bring professionalism in environmental management.	*Agreed*

Compliance to Environmental Clearance

issued by MoEF vide letter No. 21-383/2007-IA-III dated 3rd April, 2008

Sl. No.	Consent Condition	Compliance
2	The Mangalore Special Economic Zone (MSEZ) Phase-I involves a) MRPL Phase -III Refinery b) Aromatic Complex and c) Olefin Complex are proposed to be developed by the anchor promoter of MSEZ I,e M/s ONGC-MRPL in the already acquired land of about 1800 acres. The proposed MSEZ is planned adjacent to the existing MRPL refinery complex on north & eastern sides and proposed to connect NMPT with a dedicated 70/100 meter wide road-cum-pipeline (total approx. 15 km long) corridor for movement of cargo, crude and products between New Mangalore Port and MSEZ. The proposed layout has one main entry from the proposed Mangalore MSEZ corridor connected to the existing New Mangalore Port & National Highway (NH-17). The primary, Secondary and Tertiary roads are planned to give access to the industries falling in the MSEZ Phase -I. Industrial Zones for locating the olefin complex, aromatic complex, D/S Petrochemicals, ISPRCL underground crude oil storage and land for MRPL Phase-III Refinery are effectively placed in the central and southwest part of the proposed MSEZ premises. Further, the SEZ will have necessary road alignment between NMPT, SEZ and network of roads within, including service roads for inspection of pipelines on elevated corridors. The pipelines shall be built at elevated corridor locations. Pipelines will be laid on sleepers and pipe racks with sufficient ground clearance. The preferred corridor alignment avoids Coastal Regulation Zone -I & II portion along the Gurupur River and it will have elevated roadway over structures (railways / minor bridges) and reinforced earth walls. However the corridor passes over CRZ-III zone along the banks of the Kudumbur rivulet (South of ELF gas) in the form of a bridge. The proposed industrial units in MSEZ phase -1	*info.*
II	To meet the objective of producing paraxylene, aromatic complex has been considered. To maximize paraxylene, broad cut heavy naptha streams are selected as feedstock to NHT/ CCR. Aromatics precursors to new reformer include constituents that produce toluene, C8-aromatics mix & C9+ aromatics. Whereas a xylene isomerization unit has been considered to convert other C8 - aromatics into paraxylene, a transalkylation & disproportionation (TADP) unit has also been included to convert toluene & C9+ aromatics into C8-aromatics mix. simulated moving bed adsorption for paraxylene recovery (PAREX) has been incorporated.	*info.*
1	NHT/ CCR : 0.95 MMTPA	*Complied. The main Product slate, Paraxylene is within Regulatory Body approved capacity of 0.9 MMTPA*
2	Isomerization Unit (ISOMER) : 3.16 MMTPA	
3	Transalkylation & Disproportionation Unit (TADP) :1.71 MMTPA	
4	Paraxylene Recovery (PXREC) :4.07 MMTPA	
5	Xylene Fractionation Unit : 4.64 MMTPA	
6	Aromatics Extraction Unit : 0.79 MMTPA	
7	Benzene Toluene Fractionation Unit : 2.2 MMTPA	
8	Captive Power Plant (CPP) : 60 MW	*Please note that normal requirement will be in the range of 50- 55 MW, but Gas Turbine is more prone to Maintainance requirements & hence to ensure continuous supply of power to the plant, installed capacity is 72 MW*

3. A Specific Conditions:-		
1	No objection Certificate from the Karnataka State Pollution Control Board shall be obtained before initiating the project	*Please note that MZEZ has obtained Consent for Establishment (CFE) from the Karnataka State Pollution Control Board (KSPCB) letter No. CFE-CELL/MSEZ/EIA-574/08/20 dated 30th April, 2008 and OMPL on its part has obtained CFE from the KSPCB, vide letter No. PCB/559/CFE/08/252 dated 12th August, 2008 & Extension of validity of CFE vide letter No. PCB/HPI/245/2013-14/1002 dated 5th October, 2013 upto 10.8.2014 from KSPCB, Bangalore*
2	The MSEZ project shall be restricted to the Phase -I of the project, proposed over 1,800 acres. The phase-II of the project shall be considered by Ministry of Environment & Forests only after receipt of all requisite documents\ information as laid down in the Environment Impact Assessment Notification, 2006 and Coastal Regulation Zone Notification, 1991 as applicable	*NA*
3	All development in the Coastal Regulation Zone area shall be in accordance with coastal regulation zone notification, 1991. No destruction of mangroves shall be undertaken except while undertaking the permissible activities in the coastal regulation zone-I areas	*NA*
4	The project proponent shall not take up any activity in 875 acres of coastal regulation zone land, other than those permissible under the coastal regulation zone notification 1991 such as pipeline corridors, pipelines roads on stilts	*NA*
5	With regard to the containing the suspected contamination of the groundwater near Athurkodi area of Kuthethoor village, MRPL has given an undertaking vide letter dated 19.3.2008 which is as follows:-	*NA*
6	The project proponent shall obtain a report from the wildlife department with regard to existence of wildlife in the proposed site as claimed by the public before implementing the project	*Please note report from Wildlife Department was submitted to the MoEF by MSEZ*
7	The R & R package shall be strictly in accordance with the laid down norms of the state Government	*NA. However, OMPL has recruited around 302 displaced people and provided employment, till date (30.09.2020)*
8	A marine Environment Impact Assessment and Risk Assessment along with the Disaster Management Plan shall be prepared for the outfall facilities proposed in the Coastal Regulation Zone and the marine areas	*NA*
9	Project proponent shall put up a dedicated website and a display panel to inform the public regarding the Ambient Air Quality along with SO2, Nox and other parameters as prescribed by central Pollution Control Board (CPCB)	*OMPL has put up a dedicated website 'www.ompl.co.in', wherein Environment Monitoring Parameters are uploaded and also has installed a display panel at the entrance of Main Gate for public information*
10	The gaseous emissions (SO2, Nox, HC, VOC and Benzene) from various process units shall conform to the standards prescribed by the concerned State Pollution Control Board. All the measures detailed in the EMP and response to the Public Hearing shall be taken to control the point / stack and fugitive gaseous emissions from the proposed facilities, processes and storage units etc, for ensuring that the ambient air quality around the Refinery due to the expansion is maintained at the predicted 24 hourly average maximum concentration	*Please note online Monitoring Instruments of relevant parameters are installed for stacks and the readings are made available at DCS, for continuous monitoring, further uplinked to CPCB server. Corrective action will be taken for any deviation, however, plant will be run as per Standard Operating Process (SOP), prepared considering, Standards prescribed by the Regulatory Body. Further Online detectors are available for HC, benzene, and to take up 'Containment work' and 'Repair work' on detection of leak, on priority basis.*
11	The emission levels of the other pollutants shall also remain within the permissible levels	*Please note apart from the relevant parameters as from Sl. No. '10', online instruments such as for CO & SPM are also installed to stacks, so as to ensure pollutants within the permissible limits*
12	The industrial units in the SEZ and the associated facilities shall be strictly in accordance with the norms laid down by the Karnataka State Government and CPCB	*Agreed*

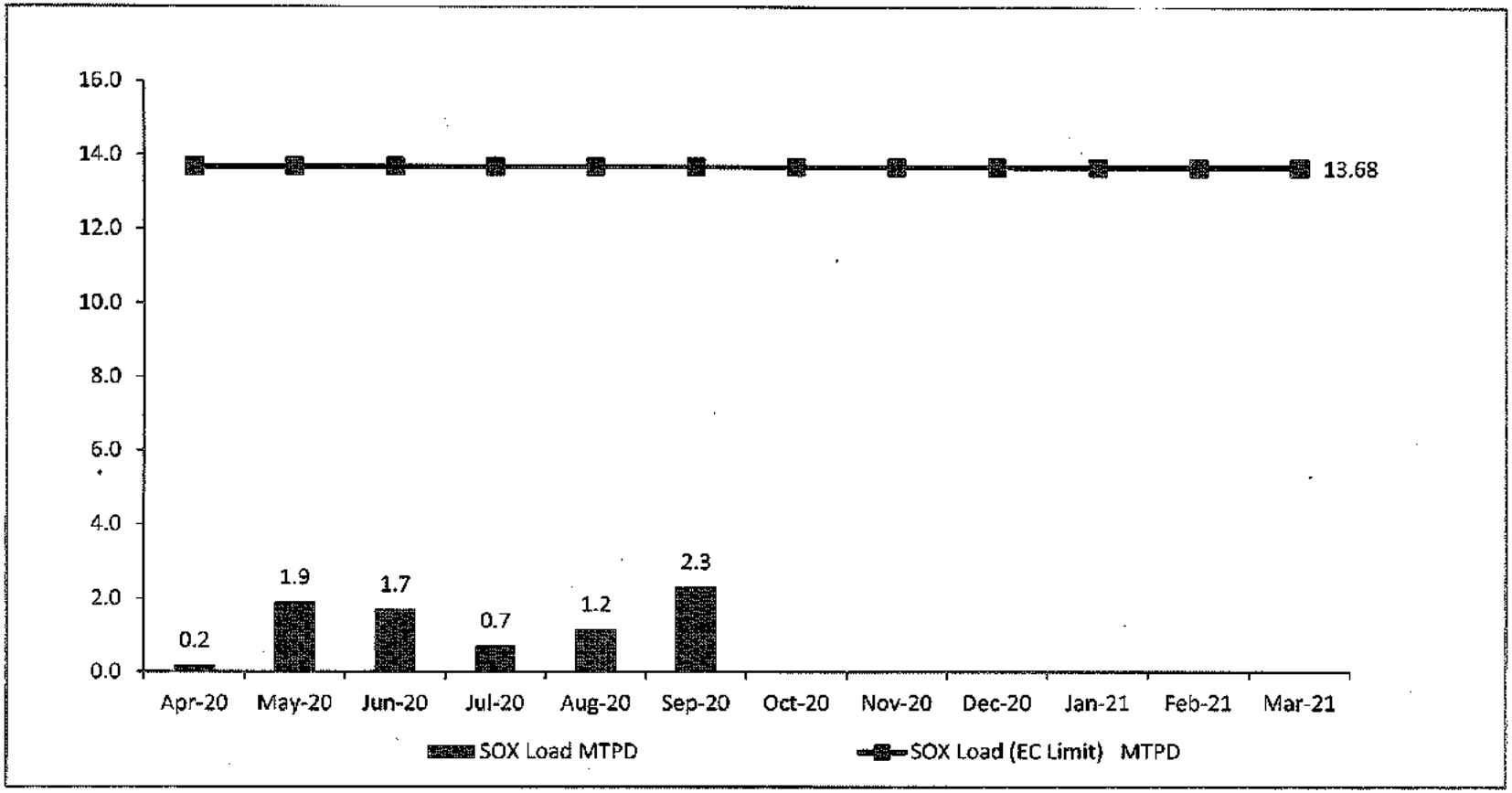
13	The project proponent shall ensure that the greenery of the area is maintained. Further, 33 % of the project area shall be dedicated for green belt development of which atleast 5 % shall be for mangrove afforestation. The local Forest Department shall be associated for this purpose and requisite budget earmarked	*Karnataka Forest Dept., GOK has executed Green Belt Development program at OMPL, with WO value of RS 1.2 Crore. Development & Maintenance phase of GBD for 4 years upto 2020, completed. Around 13, 050 plants are planted by Karnataka Forest Department and watered through Drip irrigation. The species selected for Green Belt are having good amount of 'Crown Width' as recommended in EIA by NEERI, that was subsequently approved by MoEF while giving Environment Clearance.Some of the species recommended are, Acacia ferruginea DC (Mimosaceae), Acacia nilotica* (Mimosaceae), Allanthus excelsa* (Simaroubiaceae), Albizia amara (Mimosaceae) Albizia labbeck* (Mimosaceae), Albizia doratissima(Mimosaceae), Alstonia scholaris* (Apocynaceae) Anogeissus latifolia (Combretaceae), Artocarpus integrifolia (Moraceae), Artocarpus lacucha (Moraceae), Azadirachta indica# (Meliaceae), Bauhinia malabarica (Fabaceae), Bauhinia racemosa* (Caesalpiniaceae), Butea monosperma (Fabaceae), Caesalpinia pulcherrima* (Caesalpiniaceae), Calophylum tomentosum, Cane sp. (Palmae), Canna orientalis (Cannaceae) Cassia fistula# (Caesalpiniaceae), Cassia siamea(Caesalpiniaceae), Casuarina equisetifolia# (Casurinaceae), Chlorophytum tuberosum (Liliaceae) Dalbergia sissoo (Fabaceaae), Dalbergia latifolia# (Fabaceaae)*
14	The project proponent shall ensure that the water requirement of the Mangalore city does not get affected due to the SEZ operation. Adequate provision shall be made in the reservoirs to provide for the water requirement of the cities	*Please note, OMPL, on its part has taken up following measures to conserve water. 1. UF RO plant is specifically incorporated to recycle treated water. 2. The complex Cooling Tower system is designed to use STP water, as make up from MSEZ, apart from the river water. 3. Chemical Treatment Program with Modern Technology has been institutionalised to save water in Cooling Tower Plant 4. Condensate Recovery unit is being installed to conserve water and resources such as chemicals 5. OMPL has under taken rain water harvesting measures for its buildings 6 Further, treated CRWS will be explored for usage into CT system . The current ~ Average water consumption is 157.22 m3/ hr as against design of 571 m3/ hr*
15	The project proponent shall ensure that during construction and operation of the project the traffic in the city is not affected	*Please note OMPL site is at a distance of ~ 15 KM from the Highway. Hence inconvenience to traffic movement in the city doesn't arise*

16	All precautions of the highest standards shall be incorporated in the design of the project to ensure that there is no chance of emission/ leakage of hazardous chemicals including Benzene. Detailed monitoring programme shall be designed and the information provided to the public through display and dedicated website by means of online monitoring	*Please note following measures are taken to have a check on Emission/ leakage as, *All heaters are installed with LOW NOx Burners* **Heaters stacks are fitted with following Online analyzers* *Carbon monoxide.* *Sulphur Dioxide* *Nitrogen Oxides* *Suspended Particulate matters (SPM)* **Benzene Tanks – Internal Floating Roof Tank with Nitrogen Blanket* **Paraffinic Raffinate (Volatile material) designed with Vapor recovery unit to recover vapor* **Dispersion Model Analysis was done by Bell Energy India and following Online detectors are being installed* *Benzene Detectors 27* *H2S Detector 21* *Hydrocarbon Detectors 193* *Hydrogen Detectors 68* *Fire Detectors (In case of Fire) 26* **Sample Points are closed system to stop local venting and draining* **Hydrocarbons drains are connected to closed Blow down system to recover hydrocarbon.* ** OMPL has put up a dedicated website 'www.ompl.co.in' and installed a display panel at the entrance of Main Gate for public information*
17	Low sulphur internal fuel oil and fuel gas shall be fired in process heaters and boilers	*OMPL has gone for Low Sulphur content fuels in LSHS, HSD & FG fuels. Please note 'SO2' emmission from EIA report for the project is estimated as 13.68 TPD. However, Avg SOx emmission per day is 1.3 MT/Day*
18	Quarterly monitoring of fugitive emissions shall be carried out by Fugitive Emision Detectors (GMI) leak Surveyor. Guidelines of CPCB will be followed for monitoring fugitive emissions. For control of fugitive emissions, all unsaturated hydrocarbons shall be routed to the flare system. The flare system shall be designed for smokeless burning. Flare gas recovery system shall be installed for reduction of Hydrocarbon loss and emission of VOCs, NOx, N2O, SOx & CO2 to the environment	*Please note Quarterly monitoring of fugitive emissions is being carried out by M/s Netel India Ltd, since 2016. Further based on, Dispersion Model Analysis by Bell Energy India, following Online detectors are installed* *Benzene Detectors 27* *Hydrocarbon Detectors 193* **Flare system is designed for smokeless burning by M/s AirOil*
19	Regular Ambient Air Quality Monitoring shall be carried out. The location and results of existing monitoring stations shall be reviewed in consultation with the concerned State Pollution Control Board based on the occurance of maximum ground level concentration and downwingd direction of wind. Additional stations shall be set up, if required. It shall be ensured that at least one monitoring station is set up in up-wind & in Down - wind direction along with those in other directions	*AAQM monitoring is carried out as per NAAQM rules, 2009 at 5 locations (since Jan, 2015), at a frequency of weekly twice per location, all the year round and Monitoring is done for all parameters as per the rules, as suggested by KSPCB & Monthly Reports are submitted to KSPCB . The values are found to be within the NAAQM Norms.*
20	on-line data for air emissions shall be transferred to the CPCB and SPCB regularly. The instruments used for ambient air quality monitoring shall be calibrated regularly. The monitoring protocol shall ensure continuous monitoring of all the parameters	*Online monitoring Devices have been installed to measure Heater Stack emmissions to all 10 number of stacks & are uplinked to CPCB server since April, 2016*
21	The practise of acoustic plant design shall be adopted to limit noise exposure for personnel to an 8 hour time weighted average of 90 db(A)	*Please note, as a first step, identified the sources of noise & then taken up Attenuation measures, at the design stage* *<u>Sources:</u> Pumps, Compressors & Turbines.* *<u>Attenuation measures:</u> It is ensured at design stage that Noise level at a distance of 1 mt from the equipment is < 90 db (A) & at plant boundry, it is less than 75 dB in daytime & 70 dB in night time as per the Legal requirement.*

22	All the pumps and other equipments, where there is a likihood of HC leakages, shall be provided with appropriate indicators and detectors. Provision for immediate isolation of such equipment, in case of a leakage shall also be made. The company shall adopt leak detection and repair (LDAR) programme for quantification and control of fugitive emissions	*Please note OMPL, as a first step in leak prevention, hired Bell Energy India, who carried out Dispersion Model Analysis and recommended following Online detectors which are installed at site such as,* *Benzene Detectors 27 nos* *Hydrocarbon Detectors 193 nos* ** Incase of leak, the first step is to contain the leak & simultaneously leak arresting work is carried out* ** Please note Quarterly monitoring of fugitive emissions are being carried out by M/s Hubert Enviro Care Ltd, Bykampady*
23	The product loading gantry shall be connected to the product sphere in closed circuit through the vapor arm connected to the tanker. Data on fugitive emissions shall be regularly monitored and records shall be maintained	*NA*
24	The company shall ensure that no halogenated organic is sent to the flares. If any of the halogenated organic are present, then the respective streams may be incinerated, if there are no technically feasible or economically viable reduction / recovery options. Any stream containing organic carbon, other than halogenated shall be connected to proper flaring system, if not to a recovery device or an incinerator	*Halogenated organic is used only for chloride dispersion on platinum catalyst and consumed. Halogenated compound is not sent to Flare Stack Chimney. Used catalyst will be disposed to KSPCB authorised recyclers*
25	The new standards/ norms that are being proposed by the CPCB for Petrochemical Plants and Refineries shall be applicable for the proposed expanson unit. The company shall conform to the process vent standards for organic chemicals including non-VOCs and all possible VOCs i,e TOCs standards and process vent standards for top priority chemicals. Regular monitoring will be carried out for VOC and HC and on line monitors for VOC measurements may be installed	*The new standards/ norms that are being proposed by the CPCB for Petrochemical Plants are complied.* *1. Online Monitoring system is provided to heater stacks 2. Online Detectors of HC, Benzene are installed, to check any fugitive emissions 3. The process vents are connected to flares through safety pop -up valves 4.HC sampling points closed loop systems 5. Storage of HC is in Floating roof tanks (as applicable) with double mechanical seals and Nitrogen blanketing*
26	Regular monitoring of relevant parameters for the under ground water in the surrounding areas shall be undertaken and the results shall be submitted to the relevant States Pollution Control Board	*Please note Regular monitoring of groundwater is carried out at four locations surrounding the plant as advised by KSPCB & the reports are submitted to KSPCB. The frequency of sampling is once in a month, all the year round, at a location & compared with WHO Drinking Water Standards/ IS 10500 Norms. The values are found to be within Drinking water standards/ Norms.*
27	Solid Waste generated as pretreater and Reformer catalysts, Sulphur guard absorbent and alumina Balls shall be disposed off as per the authorization from the State Pollution Control Board	*Please note that the industry has in place proper Solid Waste handling system to collect, treat and dispose off all solid waste generated from the process including Hazardous wastes and the basic Engineering by Toyo Engineering. Please note OMPL has obtained 'Authorization under Handling Hazardous Wastes' and is being disposed accordingly. Temporary Waste Storage facility is constructed of about ~ 2000 m2 area with impervious surface, closed shed and spillage collection (for any washings) & transfer (to ETP) system*
28	Oily sludge shall be sent to melting pit treatment for recovery of oil. The recovered oil shall be recycled into the refinery system. The residual sludge will be stored in HDPE lined pit for disposal after treatment. The sludge shall be incinerated in the premises only	*No oily sludge is handled in OMPL*
29	The company shall strictly follow all the recommendations mentioned in the charter on Corporate Responsibility for Environmental Protection (CREP)	*Please refer compliance details for CREP enclosed herewith (ref.: Annexure- 1)*
30	The company shall harvest surface as well as rainwater from the rooftops of the buildings proposed in the expansion project and storm water drains to recharge the ground water and use the same water for the various activities of the project to conserve fresh water	*Rain water harvesting system is implemented for rooftop buildings. During initial project stage, all surface rain water was collected into open wells and the same was utilised for construction purpose*

31	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act	*Complied and is ongoing process*
32	The company shall implement all the recommendations made in the Environmental Impact Assessment / EMP report and risk assessment report	*Complied*
33	The company will undertake all relevant measures, as indicated during the Public Hearing for improving the socio-economic conditions of the surrounding area	*Complied*
34	With regard to R & R colony the project proponent shall obtain all requisite clearences as prescribed by the concerned agencies	*NA*
B General Conditions :		
1	The project authorities shall strictly adhere to the stipulations made by the concerned State Pollution Control Board (SPCB) and the State Government	*KSPCB stipulations will be adhered to*
2	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests	*Agreed*
3	At no time, the emisions shall be allowed to go beyond the precribed standards. In the event of failure of any pollution control system adopted by the units, the respective unit should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved	*Agreed*
4	Adequate number of influent and effluent quality monitoring stations shall be set up in consultation with the SPCB. Regular monitoring shall be carried out for relevant parameters for both surface and ground water	*Influent parameters & Effluent parameters will be measured through online measuring instruments installed at Inlet & outlet of ETP. They include TOC, pH, COD, Oil, DO, Phenol, Benzene. Further regular Surface & Ground water is being monitored as advised by KSPCB. The Ground Water is monitored once in month, at four locations, for all the year round and compared with WHO Drinking Water Standards.*
5	Industrial Waste water shall be properly collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose	*Industrial Waste Water is collected in Slop Tank and then initially treated in EPTP plant to bring down Aromatics to < 20 ppm & Benzene to < 10 ppm, through Distillation & Adsorption methodology. It is treated in ETP comprising of Physical, Chemical, Biological & Tertiary Treatment Section. Treated water is recycled to cooling tower & the remaining, after ensuring Conformance to MINAS standards, will be disposed to sea through MSEZ CETP collection & Disposal system*
6	The overall noise levels in and around the plant area shall be limited within the prescribed standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA rules, 1989 viz. 75 dBA (Day time) and 70 dBA (night time)	*Sources: Pumps, Compressors & Turbines.* *Attenuation measures: It is ensured at design stage that Noise level at a distance of 1 mt from the equipment is < 90 db (A) by providing acoustic hoods, silencers, enclosures etc. as appropriate & at plant boundry is less than 75 dB in daytime & 70 dB in night time as per the Legal requirement*
7	The project authorities shall strictly cmply with the provisions made in manufacture, storage and import of Hazardous chemicals rules 1989 as amended in 2000 for handling of hazardous chemicals etc..Necessary approvals from Chief Controller of Explosives must be obtained before commission of the expansion project. Requisite On-site and Off - site Disaster Management Plans will be prepared and implemented	*Please note that necessary license/ clearance from statutory agencies have been taken such as Approval from Petroleum and Explosives Safety Organization, dated 16th June 2011, Clearance from Department of Factories of Karnataka, dated 19th June 2010. Requisite On-site and Off - site Disaster Management Plans will be adhered to as per Factories Act*
8	Authorization from the State Pollution Control Board must be obtained for collections/ treatment/ storage/ disposal of Hazardous wastes	*Please note OMPL has obtained 'Authorization under Handling Hazardous Wastes' is valid upto 30/6/2021*

9	The project authorities shall provide adequate funds both recuring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes	*Agreed. Further the Amount spent/budgeted on Environment Management requirement is approximated to RS 1.43 Crore for the year 2020-2021*
10	The stipulated conditions shall be monitored by the concerned Regional office of this Ministry / Central Pollution Control Board / State Pollution Control Board. A six monthly compliance report and the monitored data shall be submitted to them regularly. It shall also be displayed on the website of the company	*Please note biannually compliance report is submitted on regular basis through MSEZ. The Environment monitored data are being uploaded in the OMPL website*
11	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearence letter are available with the State Pollution Control Board/ Committee and may also be seen at website of the MoEF at http://www.envfor.nic.in. This should be advertised within seven days from the date of issue of clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the concerned Regional office of this Ministry	*Please note, the same was ensured by MSEZ*
12	The date of Financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work as well as the commsiioning of the project shall be informed to the Ministry and its Regional Office	*NA*
13	Proper House keeping and adequate occupational health programmes shall be taken up. Regular Occupational Health Surveillance Programme for the relevant diseases shall be carried out and the records shall be maintained properly for atleast 30-40 years. Sufficient preventive measures shall be adopted to avoid direct exposure to emission and other hydrocarbons etc..	*Agreed*
14	A separate environment management cell with full fledge laboratory facilities to carry out various management and monitoring functions shall be set up under the control of a Senior Executive	*Complied*
15	The Ministry may revoke or suspend the clearence, if implementation of any of the above condition is not satisfactory	*Info.*
16	The Ministry reserves the right to stipulate additional conditions if found necessary. The company shall implement these conditions in a time bound manner	*info.*
17	The above conditions will be enforced, inter - alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air Act, 1981, The Environment Act, 1986, The Public Liability Insurance Act, 1991, Hazardous Waste Rules 1989 and Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 along with their Amendments and Rules	*info.*


16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
13.68
0.2
1.9
1.7
0.7
1.2
2.3
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Jan-21
Feb-21
Mar-21
SOX Load MTPD
SOX Load (EC Limit) MTPD

ओएनजीसी मंगलूर पेट्रोकेमिकल्स लिमिटेड

(मंगलूर रिफाइनरी एण्ड पेट्रोकेमिकल्स लिमिटेड की सहायक कंपनी)

ONGC Mangalore Petrochemicals Limited

(A Subsidiary of Mangalore Refinery and Petrochemicals Limited)

(भारत सरकार का एक उद्यम)
(A Government of India Enterprise)

एमएसईज़ेड, पेर्मुदे, मंगलूरु – ५७४ ५०९. MSEZ, Permude, Mangaluru - 574 509.

CIN : U40107KA2006GOI041258 दूरभाष Tel.: 0824-2872000, फैक्स Fax: 0824-2872005. Website: www.ompl.co.in

REF: OMPL/PCB/SP/2020-21/

Date: 12/11/2020

To:
The Environmental Officer
Regional Office
KSPCB
Baikampady, Mangalore-11

Mangalore SEZ Ltd. – 7589 –
Documents & Contents subject to verification
Received date 12.11.2020
Received by VBShetty

Dear Sir,

Sub: Submission of Environmental Monitoring Report for the Month of October, 2020

Ref: KSPCB Combined Consent Order No. AW-301949 dated 27th January, 2017

With respect to the above subject; we are herewith submitting the following Environmental Monitoring Reports and Production Report for the Month of October, 2020 respectively, enclosed herewith.

1. Ambient Air Quality Monitoring at 5 different locations in and around OMPL, enclosed as Annexure- A
2. Water Analysis Reports at 9 different locations in and around OMPL, as Annexure-B
3. Noise Level Monitoring Report at OMPL, as Annexure-C
4. Treated Effluent Analysis Report, Annexure–D
5. Returns Regarding Water Consumed, for the Month of October, 2020, as Annexure-E
6. Production Report as Annexure-F

Thanking You,

Shivaprakash
Sr. Manager- Env

Vinay Kumar
Checked / Passed

12/11/2020

CC: **Member Secretary**, KSPCB, Bangalore
CC: **Head (Technical)**, MSEZ
CC: **CEO**, OMPL for info
CC: **COO**, OMPL for info.
CC: **DGM- Production**

ANNEXURE-H'

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in
C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore - 574509
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	**OMPL - East Side**
Report Date	04.11.2020
Report No	HECS/AA/001-008/041120

AMBIENT AIR QUALITY MONITORING: CONSOLIDATED TEST RESULTS - OCTOBER 2020

OCTOBER 2020 - Week		41-Week		42-Week		43-Week		44-Week		Avg. Value
Parameters	NAAQ	05.10.20	08.10.20	12.10.20	15.10.20	19.10.20	22.10.20	26.10.20	29.10.20	
$PM_{2.5}$ ($\mu g/m^3$)	60*	18.2	18.6	18.1	18.7	18.5	18.2	18.9	19.1	18.5
PM_{10} ($\mu g/m^3$)	100*	38.6	38.9	39.5	38.6	39.5	38.7	39.8	40.2	39.2
SO_2 ($\mu g/m^3$)	80*	8.4	8.2	7.7	8.1	8.5	8.6	7.9	8.9	8.3
NO_2 ($\mu g/m^3$)	80*	9.5	9.4	9.6	9.9	9.5	9.6	8.9	9.1	9.4
CO (mg/m^3)	2**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O_3 ($\mu g/m^3$)	100**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NH_3 ($\mu g/m^3$)	400*	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb ($\mu g/m^3$)	1*	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m^3)	6***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni (ng/m^3)	20***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene ($\mu g/m^3$)	5***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(α)P (ng/m^3)	1***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: * 24 hours average; ** :8 hours average; *** : Annual average

Test Methods Followed:

PM_{10}: IS 5182 (Pt 23): 2006 (RA 2017) (Gravimetric)
$PM_{2.5}$: HECS/AIR/SOP/002 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
SO_2: IS 5182 (Pt 2): 2001 (RA 2017) (Improved west and Geake method)
NO_2: IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O_3: HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH_3: HECS/AIR/SOP/006 Issue 02 dt. 13.06.2018 as per CPCB guidelines vol. I (2011)
CO: IS 5182 (Pt 10): 1999 (RA 2013)
Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011)
C_6H_6: GC FID/ GC MS based on IS: 5182 (Pt 11) : 2006 based on CPCB guidelines vol. I (2011)
B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004

BDL =Below detection limit; DL - Detection Limit; $PM_{2.5}$-Particulate matter size less than 2.5 Micron (DL 10 $\mu g/m^3$) , PM_{10}-Particulate matter size less than10 Micron (DL 5 $\mu g/m^3$); SO_2 Sulphur dioxide (DL 5 $\mu g/m^3$); NO_2 – Nitrogen-di-oxide (DL 6 $\mu g/m^3$); CO - Carbon Mono Oxide (DL 0.05 mg/m^3); O_3-Ozone(DL 10 $\mu g/m^3$); NH_3-Ammonia (DL 5 $\mu g/m^3$); Pb-Lead (DL 0.05 $\mu g/m^3$); As-Arsenic (DL 2 ng/m^3); Ni-Nickel (DL 10 ng/m^3); Benzene-(DL 1 $\mu g/m^3$);B(α)P- Benzo -α-pyrene (DL 1 ng/m^3); ng/m^3: nanogram per cubic meter; $\mu g/m^3$ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

HUBERT ENVIRO CARE SYSTEMS (P) LTD.

Authorized Signatory
(Dr K Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore - 574509
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	**Shantigudda**
Report Date	04.11.2020
Report No	HECS/AA/009-016/041120

AMBIENT AIR QUALITY MONITORING: CONSOLIDATED TEST RESULTS - OCTOBER 2020

OCTOBER 2020- Week		41-Week		42-Week		43-Week		44-Week		Avg. Value
Parameters	NAAQ	05.10.20	08.10.20	12.10.20	15.10.20	19.10.20	22.10.20	26.10.20	29.10.20	
$PM_{2.5}$ ($\mu g/m^3$)	60*	19.1	18.5	18.7	18.2	17.9	18.2	18.3	18.9	18.5
PM_{10} ($\mu g/m^3$)	100*	39.1	39.5	39.8	38.8	38.6	38.8	39.4	39.6	39.2
SO_2 ($\mu g/m^3$)	80*	8.2	8.3	7.9	8.2	8.5	8.3	8.1	8.2	8.2
NO_2 ($\mu g/m^3$)	80*	9.9	9.5	9.9	9.5	9.8	9.9	10.1	9.2	9.7
CO (mg/m^3)	2**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O_3 ($\mu g/m^3$)	100**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NH_3 ($\mu g/m^3$)	400*	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb ($\mu g/m^3$)	1*	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m^3)	6***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni (ng/m^3)	20***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene ($\mu g/m^3$)	5***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(α)P (ng/m^3)	1***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: * 24 hours average; ** :8 hours average; *** : Annual average

Test Methods Followed:

PM_{10}: IS 5182 (Pt 23): 2006 (RA 2017) (Gravimetric)
$PM_{2.5}$: HECS/AIR/SOP/002 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
SO_2: IS 5182 (Pt 2): 2001 (RA 2017) (Improved west and Geake method)
NO_2: IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O_3: HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH_3: HECS/AIR/SOP/006 Issue 02 dt. 13.06.2018 as per CPCB guidelines vol. I (2011)
CO: IS 5182 (Pt 10): 1999 (RA 2013)
Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011)
C_6H_6: GC FID/ GC MS based on IS: 5182 (Pt 11) : 2006 based on CPCB guidelines vol. I (2011)
B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004

BDL =Belo detection limit; DL - Detection Limit; $PM_{2.5}$-Particulate matter size less than 2.5 Micron (DL 10 $\mu g/m^3$) , PM_{10}-Particulate matter size less than10 Micron (DL 5 $\mu g/m^3$); SO_2 Sulphur dioxide (DL 5 $\mu g/m^3$); NO_2 – Nitrogen-di-oxide (DL 6 $\mu g/m^3$); CO - Carbon Mono Oxide (DL 0.05 mg/m^3); O_3-Ozone(DL 10 $\mu g/m^3$); NH_3-Ammonia (DL 5 $\mu g/m^3$); Pb-Lead (DL 0.05 $\mu g/m^3$); As-Arsenic (DL 2 ng/m^3); Ni-Nickel (DL 10 ng/m^3); Benzene-(DL 1 $\mu g/m^3$);B(α)P- Benzo -α-pyrene (DL 1 ng/m^3); ng/m^3: nanogram per cubic meter; $\mu g/m^3$ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

Authorized Signatory
(Dr K Ganesan, Lab Manager)

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in

C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore - 574509
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	**Tenka Ekkar**
Report Date	04.11.2020
Report No	HECS/AA/017-024/041120

AMBIENT AIR QUALITY MONITORING: CONSOLIDATED TEST RESULTS - OCTOBER 2020

OCTOBER 2020 - Week		41-Week		42-Week		43-Week		44-Week		Avg. Value
Parameters	NAAQ	05.10.20	08.10.20	12.10.20	15.10.20	19.10.20	22.10.20	26.10.20	29.10.20	
$PM_{2.5}$ ($\mu g/m^3$)	60*	18.9	19.1	19.8	19.6	19.8	18.7	19.7	19.9	19.4
PM_{10} ($\mu g/m^3$)	100*	39.5	37.6	39.6	39.5	37.8	36.8	37.8	38.9	38.4
SO_2 ($\mu g/m^3$)	80*	7.8	7.6	7.5	7.7	8.2	8.1	8.0	7.8	7.8
NO_2 ($\mu g/m^3$)	80*	9.2	9.1	8.9	9.1	9.0	9.1	9.2	8.9	9.1
CO (mg/m^3)	2**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O_3 ($\mu g/m^3$)	100**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NH_3 ($\mu g/m^3$)	400*	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb ($\mu g/m^3$)	1*	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m^3)	6***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni (ng/m^3)	20***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene ($\mu g/m^3$)	5***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(α)P (ng/m^3)	1***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: * 24 hours average; ** :8 hours average; *** : Annual average

Test Methods Followed:

PM_{10}: IS 5182 (Pt 23): 2006 (RA 2017) (Gravimetric)
$PM_{2.5}$: HECS/AIR/SOP/002 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
SO_2: IS 5182 (Pt 2): 2001 (RA 2017) (Improved west and Geake method)
NO_2: IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O_3: HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH_3: HECS/AIR/SOP/006 Issue 02 dt. 13.06.2018 as per CPCB guidelines vol. I (2011)
CO: IS 5182 (Pt 10): 1999 (RA 2013)
Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011)
C_6H_6: GC FID/ GC MS based on IS: 5182 (Pt 11) : 2006 based on CPCB guidelines vol. I (2011)
B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004

BDL =Below detection limit; DL - Detection Limit; $PM_{2.5}$-Particulate matter size less than 2.5 Micron (DL 10 $\mu g/m^3$) , PM_{10}-Particulate matter size less than10 Micron (DL 5 $\mu g/m^3$); SO_2 Sulphur dioxide (DL 5 $\mu g/m^3$); NO_2 – Nitrogen-di-oxide (DL 6 $\mu g/m^3$); CO - Carbon Mono Oxide (DL 0.05 mg/m^3); O_3-Ozone(DL 10 $\mu g/m^3$); NH_3-Ammonia (DL 5 $\mu g/m^3$); Pb-Lead (DL 0.05 $\mu g/m^3$); As-Arsenic (DL 2 ng/m^3); Ni-Nickel (DL 10 ng/m^3); Benzene-(DL 1 $\mu g/m^3$);B(α)P- Benzo -α-pyrene (DL 1 ng/m^3); ng/m^3: nanogram per cubic meter; $\mu g/m^3$ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

Authorised Signatory
(Dr K Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in
C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore - 574509
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	**Permude Village**
Report Date	04.11.2020
Report No	HECS/AA/025-032/041120

AMBIENT AIR QUALITY MONITORING: CONSOLIDATED TEST RESULTS - OCTOBER 2020

OCTOBER 2020- Week		41-Week		42-Week		43-Week		44-Week		Avg. Value
Parameters	**NAAQS**	**05.10.20**	**08.10.20**	**12.10.20**	**15.10.20**	**19.10.20**	**22.10.20**	**26.10.20**	**29.10.20**	
PM $_{2.5}$ (µg/m^3)	**60***	18.9	18.8	18.6	18.9	18.8	19.6	19.7	19.8	**19.1**
PM $_{10}$ (µg/m^3)	**100***	37.7	38.2	37.5	38.5	37.6	36.9	37.5	38.8	**37.8**
SO_2 (µg/m^3)	**80***	8.2	7.9	8.1	7.9	7.9	7.6	8.1	7.7	**7.9**
NO_2 (µg/m^3)	**80***	9.5	9.8	9.5	9.7	9.2	8.9	9.5	9.6	**9.5**
CO (mg/m^3)	**2****	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**
O_3 (µg/m^3)	**100****	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**
NH_3 (µg/m^3)	**400***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**
Pb (µg/m^3)	**1***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**
As (ng/m^3)	**6*****	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**
Ni (ng/m^3)	**20*****	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**
Benzene (µg/m^3)	**5*****	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**
B(α)P (ng/m^3)	**1*****	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**

Note: * 24 hours average; ** :8 hours average; * : Annual average**

Test Methods Followed:

PM $_{10}$: IS 5182 (Pt 23): 2006 (RA 2017) (Gravimetric)
PM $_{2.5}$: HECS/AIR/SOP/002 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
SO_2: IS 5182 (Pt 2): 2001 (RA 2017) (Improved west and Geake method)
NO_2: IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O_3: HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH_3: HECS/AIR/SOP/006 Issue 02 dt. 13.06.2018 as per CPCB guidelines vol. I (2011)
CO: IS 5182 (Pt 10): 1999 (RA 2013)
Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011)
C_6H_6: GC FID/ GC MS based on IS: 5182 (Pt 11) : 2006 based on CPCB guidelines vol. I (2011)
B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004

BDL =Below detection limit; DL - Detection Limit; $PM_{2.5}$-Particulate matter size less than 2.5 Micron (DL 10 µg/m^3) , PM_{10}-Particulate matter size less than10 Micron (DL 5 µg/m^3); SO_2 Sulphur dioxide (DL 5 µg/m^3); NO_2 – Nitrogen-di-oxide (DL 6 µg/m^3); CO - Carbon Mono Oxide (DL 0.05 mg/m^3); O_3-Ozone(DL 10 µg/m^3); NH_3-Ammonia (DL 5 µg/m^3); Pb-Lead (DL 0.05 µg/m^3); As-Arsenic (DL 2 ng/m^3); Ni-Nickel (DL 10 ng/m^3); Benzene-(DL 1 µg/m^3);B(α)P- Benzo -α-pyrene (DL 1 ng/m^3); ng/m^3: nanogram per cubic meter; µg/m^3 - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

Authorized Signatory
(Dr K Ganesan, Lab Manager)

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in
C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore – 574509
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	**OMPL - West Side**
Report Date	04.11.2020
Report No	HECS/AA/033-040/041120

AMBIENT AIR QUALITY MONITORING: CONSOLIDATED TEST RESULTS - OCTOBER 2020

OCTOBER 2020- Week		41-Week		42-Week		43-Week		44-Week		Avg. Value
Parameters	NAAQ	05.10.20	08.10.20	12.10.20	15.10.20	19.10.20	22.10.20	26.10.20	29.10.20	
$PM_{2.5}$ ($\mu g/m^3$)	60*	18.1	18.9	18.7	18.5	18.5	18.6	18.8	18.9	**18.6**
PM_{10} ($\mu g/m^3$)	100*	37.8	38.6	37.5	36.8	37.6	37.8	38.8	37.8	**37.8**
SO_2 ($\mu g/m^3$)	80*	7.8	8.5	7.9	7.8	7.9	7.2	7.6	7.8	**7.8**
NO_2 ($\mu g/m^3$)	80*	9.8	9.9	9.5	9.2	9.8	9.0	9.5	9.2	**9.5**
CO (mg/m^3)	2**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**
O_3 ($\mu g/m^3$)	100**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**
NH_3 ($\mu g/m^3$)	400*	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**
Pb ($\mu g/m^3$)	1*	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**
As (ng/m^3)	6***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**
Ni (ng/m^3)	20***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**
Benzene ($\mu g/m^3$)	5***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**
B(α)P (ng/m^3)	1***	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	**BDL**

Note: * 24 hours average; ** :8 hours average; * : Annual average**

Test Methods Followed:

PM_{10}: IS 5182 (Pt 23): 2006 (RA 2017) (Gravimetric)
$PM_{2.5}$: HECS/AIR/SOP/002 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
SO_2: IS 5182 (Pt 2): 2001 (RA 2017) (Improved west and Geake method)
NO_2: IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O_3: HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH_3: HECS/AIR/SOP/006 Issue 02 dt. 13.06.2018 as per CPCB guidelines vol. I (2011)
CO: IS 5182 (Pt 10): 1999 (RA 2013)
Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011)
C_6H_6: GC FID/ GC MS based on IS: 5182 (Pt 11) : 2006 based on CPCB guidelines vol. I (2011)
B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004
BDL =Below detection limit; DL - Detection Limit; $PM_{2.5}$-Particulate matter size less than 2.5 Micron (DL 10 $\mu g/m^3$) , PM_{10}-Particulate matter size less than10 Micron (DL 5 $\mu g/m^3$); SO_2 Sulphur dioxide (DL 5 $\mu g/m^3$); NO_2 – Nitrogen-di-oxide (DL 6 $\mu g/m^3$); CO - Carbon Mono Oxide (DL 0.05 mg/m^3); O_3-Ozone(DL 10 $\mu g/m^3$); NH_3-Ammonia (DL 5 $\mu g/m^3$); Pb-Lead (DL 0.05 $\mu g/m^3$); As-Arsenic (DL 2 ng/m^3); Ni-Nickel (DL 10 ng/m^3); Benzene-(DL 1 $\mu g/m^3$);B(α)P- Benzo -α-pyrene (DL 1 ng/m^3); ng/m^3: nanogram per cubic meter; $\mu g/m^3$ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

Authorized Signatory
(Dr K Ganesan, Lab Manager)

ANNEXURE-15-

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in
C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore - 574509
Sample Description	**GW1 - Ground Water collected from Narayana Guru Community Hall, Permude**
Sample drawn by	HECS
Date of Sampling	07.10.2020
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	07.10.2020
Date of Analysis start & completion	07.10.2020 & 12.10.2020
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	13.10.2020
Report No	HECS/W/001/071020

GROUND WATER QUALITY MONITORING RESULTS - OCTOBER 2020

S.No.	Parametersmonitored	Test method followed	Units	Results	IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Pt -11) 1983	-	7.16	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	0.5	5 max
4.	Odour	IS 3025 (Pt -5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Pt -8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as $CaCo_3$	IS 3025 (Pt -21) 1983	mg/L	49.1	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	12.1	200 max
8.	Total Alkalinity as $CaCO_3$	IS 3025 (Pt -23) 1986	mg/L	43.7	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	12.9	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	4.6	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	75.2	2000 max
12.	Sulphate as SO_4	IS 3025 (Pt -24) 1986	mg/L	6.8	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.57	1.5 max
14.	Nitrate as NO_3	ASTM (Pt -31) 1978	mg/L	7.9	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.21	0.3 max
16.	Hexavalent Chromium Cr^{6+}	IS3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	*Escherichia coli*	IS1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Note:-BDL - Below Detection Limit; D.L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; MPN- Most Probable Number; mL-Milliliter

CONCLUSION: GROUND WATER AS ABOVE PARAMETERS MEETS DRINKING WATER GUIDELINES OF IS 10500: 2012

End of Report

HUBERT ENVIRO CARE SYSTEMS (P) LTD.

Authorized Signatory
(Dr. Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in

C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore - 574509
Sample Description	**GW2 - Ground Water collected from Gagtel Labour Colony**
Sample drawn by	HECS
Date of Sampling	07.10.2020
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	07.10.2020
Date of Analysis start & completion	07.10.2020 & 12.10.2020
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	13.10.2020
Report No	HECS/W/002/071020

GROUND WATER QUALITY MONITORING RESULTS - OCTOBER 2020

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Pt -11) 1983	-	7.25	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	1	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	0.6	5 max
4.	Odour	IS 3025 (Pt -5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Pt -8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as $CaCo_3$	IS 3025 (Pt -21) 1983	mg/L	49.1	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	18.1	200 max
8.	Total Alkalinity as $CaCO_3$	IS 3025 (Pt -23) 1986	mg/L	48.0	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	14.8	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	BDL (DL 2)	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	76	2000 max
12.	Sulphate as SO_4	IS 3025 (Pt -24) 1986	mg/L	5.6	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.74	1.5 max
14.	Nitrate as NO_3	ASTM (Pt -31) 1978	mg/L	7.6	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.21	0.3 max
16.	Hexavalent Chromium Cr^{6+}	IS3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS1622 1981 (RA 2009)	MPN/100mL	Absent	Not Detectable
18.	*Escherichia coli*	IS1622 1981 (RA 2009)	Per 100mL	Absent	Not Detectable

Note:-BDL - Below Detection Limit; D.L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; MPN- Most Probable Number; mL-Milliliter

CONCLUSION: GROUND WATER AS ABOVE PARAMETERS MEETS DRINKING WATER GUIDELINES OF IS 10500:2012

End of Report

HUBERT ENVIRO CARE SYSTEMS (P) LTD.

Authorized Signatory
(Dr. K. Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore – 574509
Sample Description	**GW3 - Ground Water collected from L&T New Labour Colony**
Sample drawn by	HECS
Date of Sampling	07.10.2020
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	07.10.2020
Date of Analysis start & completion	07.10.2020 & 12.10.2020
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	13.10.2020
Report No	HECS/W/003/071020

GROUND WATER QUALITY MONITORING RESULTS – OCTOBER 2020

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Pt -11) 1983	-	6.89	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	1	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	0.7	5 max
4.	Odour	IS 3025 (Pt -5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Pt -8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as $CaCo_3$	IS 3025 (Pt -21) 1983	mg/L	52.9	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	12.1	200 max
8.	Total Alkalinity as $CaCO_3$	IS 3025 (Pt -23) 1986	mg/L	48.0	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	12.9	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	5.5	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	78	2000 max
12.	Sulphate as SO_4	IS 3025 (Pt -24) 1986	mg/L	5.6	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO_3	ASTM (Pt -31) 1978	mg/L	7.2	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.18	0.3 max
16.	Hexavalent Chromium Cr^{6+}	IS3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	*Escherichia coli*	IS1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Note:-BDL - Below Detection Limit; D.L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; MPN- Most Probable Number; mL-Milliliter

CONCLUSION: GROUND WATER AS ABOVE PARAMETERS MEETS DRINKING WATER GUIDELINES OF IS 10500:2012

End of Report

HUBERT ENVIRO CARE SYSTEMS (P) LTD.

Authorized Signatory
(Dr K Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in
C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore - 574509
Sample Description	**GW4 - Ground Water collected Near OMPL - ETP**
Sample drawn by	HECS
Date of Sampling	12.10.2020
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	12.10.2020
Date of Analysis start & completion	12.10.2020 & 16.10.2020
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	17.10.2020
Report No	HECS/W/004/121020

GROUND WATER QUALITY MONITORING RESULTS – OCTOBER 2020

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Pt -11) 1983	-	6.72	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	1.7	5 max
4.	Odour	IS 3025 (Pt -5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Pt -8) 1984	--	Agreeable	Agreeable
6.	Total Hardness as $CaCo_3$	IS 3025 (Pt -21) 1983	mg/L	41.5	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	10.6	200 max
8.	Total Alkalinity as $CaCO_3$	IS 3025 (Pt -23) 1986	mg/L	26.2	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	20.4	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	3.6	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	58	2000 max
12.	Sulphate as SO_4	IS 3025 (Pt -24) 1986	mg/L	5.59	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.39	1.5 max
14.	Nitrate as NO_3	ASTM (Pt -31) 1978	mg/L	7.5	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.05	0.3 max
16.	Hexavalent Chromium Cr^{6+}	IS3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Note:-BDL - Below Detection Limit; D.L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; MPN- Most Probable Number; mL-Millilliter

CONCLUSION: GROUND WATER AS ABOVE PARAMETERS MEETS DRINKING WATER GUIDELINES OF IS 10500:2012

End of Report

HUBERT ENVIRO CARE SYSTEMS (P) LTD.

Authorized Signatory
(Dr K Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in
C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore - 574509
Sample Description	**OW1- Open Well Water collected from TenkaEkkar**
Sample drawn by	HECS
Date of Sampling	07.10.2020
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	07.10.2020
Date of Analysis start & completion	07.10.2020 & 12.10.2020
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	13.10.2020
Report No	HECS/W/005/071020

OPEN WELL WATER QUALITY MONITORING RESULTS – OCTOBER 2020

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Pt -11) 1983	-	6.74	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Pt -5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Pt -8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as $CaCo_3$	IS 3025 (Pt -21) 1983	mg/L	18.9	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	3.0	200 max
8.	Total Alkalinity as $CaCO_3$	IS 3025 (Pt -23) 1986	mg/L	13.1	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	11.1	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	2.7	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	34	2000 max
12.	Sulphate as SO_4	IS 3025 (Pt -24) 1986	mg/L	BDL (DL 5)	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.49	1.5 max
14.	Nitrate as NO_3	ASTM (Pt -31) 1978	mg/L	5.7	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.11	0.3 max
16.	Hexavalent Chromium Cr^{6+}	IS3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	*Escherichia coli*	IS1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Note:-BDL - Below Detection Limit; D.L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; MPN- Most Probable Number; mL-Millliter

CONCLUSION: OPENWELL WATER AS ABOVE PARAMETERS MEETS DRINKING WATER GUIDELINES OF IS 10500:2012

End of Report

HUBERT ENVIRO CARE SYSTEMS (P) LTD.

Authorized Signatory
(Dr.K.Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in

C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore – 574509
Sample Description	**OW2 - Open Well Water collected from Shantigudda Village**
Sample drawn by	HECS
Date of Sampling	07.10.2020
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	07.10.2020
Date of Analysis start & completion	07.10.2020 & 12.10.2020
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	13.10.2020
Report No	HECS/W/006/071020

OPEN WELL WATER QUALITY MONITORING RESULTS – OCTOBER 2020

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Pt -11) 1983	-	6.80	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Pt -5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Pt -8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as $CaCo_3$	IS 3025 (Pt -21) 1983	mg/L	34.0	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	13.6	200 max
8.	Total Alkalinity as $CaCO_3$	IS 3025 (Pt -23) 1986	mg/L	30.5	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	20.4	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	BDL (DL 2)	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	72	2000 max
12.	Sulphate as SO_4	IS 3025 (Pt -24) 1986	mg/L	BDL (DL 5)	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.39	1.5 max
14.	Nitrate as NO_3	ASTM (Pt -31) 1978	mg/L	6.8	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.2	0.3 max
16.	Hexavalent Chromium Cr^{6+}	IS3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	*Escherichia coli*	IS1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Note:-BDL - Below Detection Limit; D.L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; MPN- Most Probable Number; mL-Milliliter

CONCLUSION: OPENWELL WATER AS ABOVE PARAMETERS MEETS DRINKING WATER GUIDELINES OF IS 10500:2012

End of Report

HUBERT ENVIRO CARE SYSTEMS (P) LTD.

Authorized Signatory
(Dr K Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in
C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore – 574509
Sample Description	**OW3 - Open Well Water collected from Permude Village**
Sample drawn by	HECS
Date of Sampling	07.10.2020
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	07.10.2020
Date of Analysis start & completion	07.10.2020 & 12.10.2020
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	13.10.2020
Report No	HECS/W/007/071020

OPEN WELL WATER QUALITY MONITORING RESULTS – OCTOBER 2020

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Pt -11) 1983	-	6.78	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	1	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Pt -5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Pt -8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as $CaCo_3$	IS 3025 (Pt -21) 1983	mg/L	37.8	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	10.6	200 max
8.	Total Alkalinity as $CaCO_3$	IS 3025 (Pt -23) 1986	mg/L	34.9	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	20.4	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	2.7	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	75.2	2000 max
12.	Sulphate as SO_4	IS 3025 (Pt -24) 1986	mg/L	BDL (DL 5)	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.49	1.5 max
14.	Nitrate as NO_3	ASTM (Pt -31) 1978	mg/L	7.5	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.1	0.3 max
16.	Hexavalent Chromium Cr^{6+}	IS3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	*Escherichia coli*	IS1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Note:-BDL - Below Detection Limit; D.L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; MPN- Most Probable Number; mL-Milliliter

CONCLUSION: OPENWELL WATER AS ABOVE PARAMETERS MEETS DRINKING WATER GUIDELINES OF IS 10500:2012

End of Report

HUBERT ENVIRO CARE SYSTEMS (P) LTD.

Authorised Signatory
(D.K Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in

C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore - 574509
Sample Description	**SW1 - Surface Water collected Near OMPL - Flare Area**
Sample drawn by	HECS
Date of Sampling	12.10.2020
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	12.10.2020
Date of Analysis start & completion	12.10.2020 & 16.10.2020
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	17.10.2020
Report No	HECS/W/008/121020

SURFACE WATER QUALITY MONITORING RESULTS – OCTOBER 2020

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Pt -11) 1983	-	6.92	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	3.0	5 max
4.	Odour	IS 3025 (Pt -5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Pt -8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as Ca CO_3	IS 3025 (Pt -21) 1983	mg/L	37.8	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	13.6	200 max
8.	Total Alkalinity as $CaCO_3$	IS 3025 (Pt -23) 1986	mg/L	21.8	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	12.9	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	BDL (DL 2)	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	71.2	2000 max
12.	Sulphate as SO_4	IS 3025 (Pt -24) 1986	mg/L	37.6	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.35	1.5 max
14.	Nitrate as NO_3	ASTM (Pt -31) 1978	mg/L	6.4	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.06	0.3 max
16.	Hexavalent Chromium Cr^{6+}	IS3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS1622:1981(R.aff 2009)	MPN/100mL	Absent	Not Detectable
18.	*Escherichia coli*	IS1622:1981(R.aff 2009)	Per 100mL	Absent	Not Detectable

Note:-BDL - Below Detection Limit; D.L- Detection Limit; NTU-NephelometricTurbidity Unit; mg/L - Milligrams per liter; NA-Not Available

CONCLUSION: SURFACE WATER AS ABOVE PARAMETERS MEETS DRINKING WATER GUIDELINES OF IS 10500:2012

End of Report

HUBERT ENVIRO CARE SYSTEMS (P) LTD.

Authorized Signatory
(Dr K Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in
C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore – 574509
Sample Description	**SW2 - Surface Water collected Near OMPL - Near Central Warehouse**
Sample drawn by	HECS
Date of Sampling	12.10.2020
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	12.10.2020
Date of Analysis start & completion	12.10.2020 & 16.10.2020
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	17.10.2020
Report No	HECS/W/009/121020

SURFACE WATER QUALITY MONITORING RESULTS – OCTOBER 2020

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Pt -11) 1983	-	6.81	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	3.5	5 max
4.	Odour	IS 3025 (Pt -5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Pt -8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as $CaCo_3$	IS 3025 (Pt -21) 1983	mg/L	45.3	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	13.6	200 max
8.	Total Alkalinity as $CaCO_3$	IS 3025 (Pt -23) 1986	mg/L	17.4	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	14.8	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	2.7	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	71.2	2000 max
12.	Sulphate as SO_4	IS 3025 (Pt -24) 1986	mg/L	27.6	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.45	1.5 max
14.	Nitrate as NO_3	ASTM (Pt -31) 1978	mg/L	7.1	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.091	0.3 max
16.	Hexavalent Chromium Cr^{6+}	IS3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	*Escherichia coli*	IS1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Note:-BDL - Below Detection Limit; D.L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligrams per liter

CONCLUSION: SURFACE WATER AS ABOVE PARAMETERS MEETS DRINKING WATER GUIDELINES OF IS 10500:2012

End of Report

HUBERT ENVIRO CARE SYSTEMS (P) LTD.

Authorized Signatory
(Dr K Ganesan - Lab Manager)

ANNEXURE- C

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in
C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore - 574509
Sample Description	Noise Monitoring
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	**OMPL - North, South, East and West sides**
Sampling Date	09.10.2020
Report Date	15.10.2020
Report No.	HECS/N/001/091020

NOISE MONITORING – OCTOBER 2020 RESULTS

S.No.	Sampling Location	MoEFCC requirements in dB		Avg. Noise level observed in dB	
		Day	Night	Day	Night
1.	OMPL-North	75	70	69.7	58.3
2.	OMPL-South			67.5	57.7
3.	OMPL-East			69.2	58.6
4.	OMPL-West			68.4	58.8

Note: dB: Decibel

Limits: **Industrial Area: Day Time -75 dB (A), Night Time -70 dB (A).** Commercial Area: Day Time-65 dB (A), Night Time-55 dB (A). Residential Area: Day Time-55 dB (A), Night Time-45 dB (A).Silence Zone: Day Time-50 dB (A), Night Time-40 dB (A).

Note: Leq- Equivalent Noise Level (hourly); Reference: The Noise Pollution (Regulation and Control) Rules, 2000, CPCB, New Delhi

INFERENCE: The observed noise levels are within the limits as per The Noise Pollution (Regulation and Control) Rules, 2000 under the Environment (Protection) Act, 1986

*****End of Report *****

HUBERT ENVIRO CARE SYSTEMS (P) LTD.

Authorized Signatory
(D. Ganesan - Lab Manager)

ANNEXURE - D.

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in
C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore – 574509
Sample Description	**Guard Pond Pump Discharge (ETP Effluent)**
Sample drawn by	HECS
Date of Sampling	12.10.2020
Qty. of sample received	2 L in HDPE Can + 1 L amber glass bottle
Date of sample received	12.10.2020
Date of Analysis start & completion	12.10.2020 & 19.10.2020
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	20.10.2020
Report No	HECS/WW/006/121020

ETP EFFLUENT WATER RESULTS – OCTOBER 2020

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
1.	Colour	IS 3025 (Pt 4)1983(RA 2006)	Hazen Units	3	All efforts should be made to remove colour and unpleasant odour as far as practicable
2.	Odour	IS 3025 (Pt 5)-1983,RA 2006	-	Agreeable	
3.	Total Suspended Solids	2540D APHA 23rd Edn.. 2012	mg/L	5.2	100
4.	pH	IS 3025 (Pt 11):1983(RA 2006)	-	6.65	6.0-8.5
5.	Temperature	IS 3025 (Pt 9):1983(RA:2006)	°C	29	Shall not exceed 5 degree Centigrade above the receiving water temperature
6.	Oil & Grease	IS 3025,4(Pt 39):2000 (RA 2009)	mg/L	2.2	5
7.	Total Residual Chlorine as Cl_2	IS 3025 (Pt26)1986(RA 2009)	mg/L	BDL (DL 0.1)	1
8.	Ammonical Nitrogen as N	IS 3025 Pt (34)1988	mg/L	7.5	50
9.	Total Kjeldhal Nitrogen as N	IS 3025 Pt (34)1988	mg/L	26.2	100
10.	Free Ammonia as NH_3	IS 3025 (Pt 34)1998 RA. 2003	mg/L	BDL (DL 0.02)	5
11.	BOD, 3 days @ 27°C as O_2	IS 3025 (Pt 44)1993(RA 2009)	mg/L	BDL (DL 2)	30
12.	COD as O_2	IS 3025 Pt (58)2006	mg/L	7.32	125
13.	Lead as Pb	IS 3025 (Pt 47)1994(RA 2009)	mg/L	BDL (DL 0.1)	0.1
14.	Chromium (Hexavalent) as Cr^{6+}	IS 3025 Pt (52):2003	mg/L	BDL (DL 0.01)	0.1
15.	Total Chromium as Cr	IS 3025(Pt52):2003 (RA 2009)	mg/L	BDL (DL 0.01)	2.0
16.	Copper as Cu	IS 3025 5,(Pt 42)1992(RA 2009)	mg/L	BDL (DL 0.05)	1.0
17.	Zinc as Zn	IS 3025 (Pt 49)1994(RA 2009)	mg/L	BDL (DL 0.1)	5.0

HUBERT ENVIRO CARE SYSTEMS (P) LTD.

Authorized Signatory
(Dr K Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in

C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore – 574509
Sample Description	**Guard Pond Pump Discharge (ETP Effluent)**
Sample drawn by	HECS
Date of Sampling	12.10.2020
Qty. of sample received	2 L in HDPE Can + 1 L amber glass bottle
Date of sample received	12.10.2020
Date of Analysis start & completion	12.10.2020 & 19.10.2020
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	20.10.2020
Report No	HECS/WW/006/121020

ETP EFFLUENT WATER RESULTS – OCTOBER 2020

S.No.	Parameters Monitored	Test method followed	Units	Results	Permissible Limit
18.	Nickel as Ni	IS 3025 (Pt 54)2003 (RA 2009)	mg/L	BDL (DL 0.05)	1.0
19.	Fluoride as F-	IS 3025 Pt (60):2008	mg/L	BDL (DL 0.2)	1.0
20.	Sulphide as S^{2-}	IS 3025 (Pt 29)1986 (RA 2009)	mg/L	BDL (DL 0.04)	2.0
21.	Particle Size of Suspended Solids	APHA 23rd Edition	-	Passed through 850 micron	850 micron
22.	Arsenic as As	IS 3025 (Pt 37)1988(RA 2009)	mg/L	BDL (DL 0.005)	0.2
23.	Mercury as Hg	IS 3025 (Pt 48)1994 RA 1999	mg/L	BDL (DL 0.001)	0.01
24.	Cadmium as Cd	IS 3025 (Pt 41)1991	mg/L	BDL (DL 0.01)	0.1
25.	Selenium as Se	IS 3025 (Pt 56)2003	mg/L	BDL (DL 0.005)	0.05
26	Cyanide as CN	IS 3025 (Pt 27)1986 RA. 2009	mg/L	BDL (DL 0.01)	0.2
27.	Phenols as C6H5OH	IS 3025 Pt (43)1992,RA 2009	mg/L	BDL (DL 0.001)	0.35
28.	Total Iron as Fe	IS 3025(Pt 53):2003(RA 2009)	mg/L	0.21	3
29.	Manganese	IS 3025 (Pt-59):2006	mg/L	BDL (DL 0.01)	2
30.	Total Phosphorous as P	IS 3025(Pt 31):1988(RA 2009)	mg/L	BDL (DL 0.01)	3
31.	Nitrate	IS 3025 (Pt 34):1988 (RA 2009)	mg/L	BDL (DL 1)	20
32.	Vanadium as V	IS 3025 (Pt 56)2003	mg/L	BDL (DL 0.01)	0.1
33.	Benzo(a)pyrene	USEPA 8270C	mg/L	BDL (DL 0.0001)	0.2
34.	Benzene	USEPA 8270C	mg/L	BDL (DL 0.0001)	0.1
35.	Bioassay Test	IS 6582(Pt 2):2001	Tf	9:1	90% survival of fish after 96 hrs in 100% effluent

Note:-BDL - Below Detection Limit; D.L- Detection Limit; mg/L - Milligrams per liter

CONCLUSION: ETP OUTLET EFFULENTWATER AS ABOVE PARAMETERSARE WITHIN STANDARDS

End of Report

Authorized Signatory
(Dr K Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in

C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore - 574509
Sample Description	**Guard Pond Pump Discharge (ETP Effluent)**
Sample drawn by	HECS
Date of Sampling	23.10.2020
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	23.10.2020
Date of Analysis start & completion	23.10.2020 & 30.10.2020
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	02.11.2020
Report No	HECS/WW/002/231020

GUARD POND PUMP DISCHARGE (ETP EFFLUENT) RESULTS – OCTOBER 2020

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
1.	Colour	IS 3025 (Pt 4)1983(RA 2006)	Hazen Units	3	All efforts should be made to remove colour and unpleasant odour as far as practicable
2.	Odour	IS 3025 (Pt 5)-1983,RA 2006	-	Agreeable	
3.	Total Suspended Solids	2540D APHA 23rd Edn., 2012	mg/L	BDL (DL 4)	100
4.	pH	IS 3025 (Pt 11):1983(RA 2006)	-	7.02	6.0-8.5
5.	Temperature	IS 3025 (Pt 9):1983(RA:2006)	°C	29	Shall not exceed 5 degree Centigrade above the receiving water temperature
6.	Oil & Grease	IS 3025,4(Pt 39):2000 (RA 2009)	mg/L	BDL (DL 2)	5
7.	Total Residual Chlorine as Cl_2	IS 3025 (Pt26)1986(RA 2009)	mg/L	BDL (DL 0.1)	1
8.	Ammonical Nitrogen as N	IS 3025 Pt (34)1988	mg/L	5.7	50
9.	Total Kjeldhal Nitrogen as N	IS 3025 Pt (34)1988	mg/L	21.7	100
10.	Free Ammonia as NH_3	IS 3025 (Pt 34)1998 RA. 2003	mg/L	BDL (DL 0.02)	5
11.	BOD, 3 days @ 27°C as O_2	IS 3025 (Pt 44)1993(RA 2009)	mg/L	2.5	30
12.	COD as O_2	IS 3025 Pt (58)2006	mg/L	15.4	125
13.	Lead as Pb	IS 3025 (Pt 47)1994(RA 2009)	mg/L	BDL (DL 0.1)	0.1
14.	Chromium (Hexavalent) as Cr^{6+}	IS 3025 Pt (52):2003	mg/L	BDL (DL 0.01)	0.1
15.	Total Chromium as Cr	IS 3025 (Pt52):2003 (RA 2009)	mg/L	BDL (DL 0.01)	2.0
16.	Copper as Cu	IS 3025 5,(Pt 42)1992(RA 2009)	mg/L	BDL (DL 0.05)	1.0
17.	Zinc as Zn	IS 3025 (Pt 49)1994(RA 2009)	mg/L	BDL (DL 0.1)	5.0

HUBERT ENVIRO CARE SYSTEMS (P) LTD.

Authorized Signatory
(Dr.K.Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in
C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore – 574509
Sample Description	**Guard Pond Pump Discharge (ETP Effluent)**
Sample drawn by	HECS
Date of Sampling	23.10.2020
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	23.10.2020
Date of Analysis start & completion	23.10.2020 & 30.10.2020
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	02.11.2020
Report No	HECS/WW/002/231020

ETP EFFLUENT WATER RESULTS – OCTOBER 2020

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
18.	Nickel as Ni	IS 3025 (Pt 54)2003 (RA 2009)	mg/L	BDL (DL 0.05)	1.0
19.	Fluoride as F-	IS 3025 Pt (60):2008	mg/L	BDL (DL 0.2)	1.0
20.	Sulphide as S^{2-}	IS 3025 (Pt 29)1986 (RA 2009)	mg/L	BDL (DL 0.04)	2.0
21.	Particle Size of Suspended solids	APHA 23rd Edition	-	Passed through 850 micron	850 micron
22.	Arsenic as As	IS 3025 (Pt 37)1988(RA 2009)	mg/L	BDL (DL 0.005)	0.2
23.	Mercury as Hg	IS 3025 (Pt 48)1994 RA 1999	mg/L	BDL (DL 0.001)	0.01
24.	Cadmium as Cd	IS 3025 (Pt 41)1991	mg/L	BDL (DL 0.01)	0.1
25.	Selenium as Se	IS 3025 (Pt 56)2003	mg/L	BDL (DL 0.005)	0.05
26	Cyanide as CN	IS 3025 (Pt 27)1986 RA. 2009	mg/L	BDL (DL 0.01)	0.2
27.	Phenols as C6H5OH	IS 3025 Pt (43)1992,RA 2009	mg/L	BDL (DL 0.001)	0.35
28.	Total Iron as Fe	IS 3025 (Pt 53):2003(RA 2009)	mg/L	0.21	3
29.	Manganese	IS 3025 (Pt-59):2006	mg/L	BDL (DL 0.01)	2
30.	Total Phosphorous as P	IS 3025 (Pt 31):1988(RA 2009)	mg/L	BDL (DL 0.01)	3
31.	Nitrate	IS 3025 (Pt 34):1988 (RA 2009)	mg/L	BDL (DL 1)	20
32.	Vanadium as V	IS 3025 (Pt 56)2003	mg/L	BDL (DL 0.01)	0.1
33.	Benzo(a)pyrene	USEPA 8270C	mg/L	BDL (DL 0.0001)	0.2
34.	Benzene	USEPA 8270C	mg/L	BDL (DL 0.0001)	0.1
35.	Bioassay Test	IS 6582(Pt 2):2001	Tf	9:1	90% survival of fish after 96 hrs in 100% effluent

Note:-BDL - Below Detection Limit; D.L- Detection Limit; mg/L - Milligrams per liter

CONCLUSION: ETP OUTLET EFFULENTWATER AS ABOVE PARAMETERSARE WITHIN STANDARDS

End of Report

HUBERT ENVIRO CARE SYSTEMS (P) LTD.

Authorized Signatory
(Dr. K Ganesan - Lab Manager)

ANNEXURE - E -

Form-1 (Rule 4)

Returns Regarding Water Consumed during the Month of October, 2020

Name and address of the Consu	Purpose for which water consumed	Reading at the begining of the first day of the calendar month under report	Reading at the end of the last day of the calendar month under report	Quantity of Water Consumed in Kilo Leters	If the meter was out of order, the monthly average consumption of water for the previous 3 months of the working period	Quantity of water qualifying for rebate according to the assessee	Remarks
M/s ONGC Mangalore Petrochemicals Limited, Mangalore Special Economic Zone, Permude, Mangalore -574 509	**Industrial cooling, spraying in mine pits or boiler feed**						
	Cooling Water	0	14647	14647			
	Boiler Feed Water	0	50304	50304			
	Fire Water	0	25292	25292			
	Domestic purpose						
	Drinking Water & Sanitation	0	5075	5075			
	Processing whereby water gets polluted and the pollutants are easily bio-degradable						
	Service Water	0	4708	4708			
Total Consumption				**1,00,026**			

Signature of the Consumer :

Name Shivaprakash, Sr. Manager(Env)

Address M/s ONGC Mangalore Petrochemicals Limited, Mangalore Special Economic Zone, Permude, Mangalore -574 509

ANNEXURE- L.

ONGC Mangalore Petrochemicals Limited

Production Details for October, 2020

Net Naptha Processed –36,512 MT

Sl. No.	Name of the Product	Quantity, MT
1	Paraxylene (Product)	22,385
2	Benzene (Co product)	6,986