



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/EC/COMP/2019-20/1

27 Dec, 2019

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
MANGALORE-575011

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 at 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 receipt of all requisite documents/information as laid down in the Environmental Impact Assessment Notification, 2006 and Coastal Regulation Zone Notification, 1991 as applicable.	Will be complied. MSEZL will approach MoEF with requisite documents as per EIA Notification, 2006 for Phase-2 expansions if taken in future.
(iii)	All development in the Coastal Regulation Zone area shall be in accordance with the Coastal Regulation Zone	Complied.



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

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
	Notification, 1991. No destruction of mangroves shall be undertaken except while undertaking the permissible activities in the Coastal Regulation Zone-I areas.	
(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) 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.	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.
(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 Forest Department is obtained and 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 1 st PDF 1245 families out of 1253, In 2 nd PDF 214 families out of 214, In 3 rd PDF 146 families out of 147 families & 14 shops has been compensated with R&R Packages. Totally 1619 families have vacated their houses and are



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

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
		rehabilitated.
(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 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 NO _x 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 (SO ₂ , NO _x , 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 13 th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.



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

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
(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 for mangrove afforestation. The local Forest Department shall be associated for this purpose and requisite budget earmarked.	Presently MSEZL has completed Green Belt development in 247 acres out of 272 acres by planting 11150 saplings and remaining green belt development will be completed in the year 2020-21. Green Belt 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 ₂ O, SOx & CO ₂ to the environment.	Noted and will be complied.



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

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
(xix)	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 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.	Ambient Air Quality Monitoring is being carried out regularly in two 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 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.	Noted and will be complied.
(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	Noted and will be complied.



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

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
	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.	
(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 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. During operation stage MSEZL will dispose the solid waste as per the directions of State Pollution Control Board.
(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.	Noted and will be complied.
(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 water drains to recharge the ground water and use the same water for the various activities of the project to conserve fresh water.	Noted and will be complied.
(xxxi)	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	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	The R&R Colonies are developed after obtaining the requisite clearances from 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

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
	concerned agencies.	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 proposed pipeline cum road Corridor in Reach-II area. 3. 18 th June 2015 for development of Multi Product Units as Mangalore SEZ. Copy of amendments is 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 19 th May 1993 and 31 st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	Noted and will be complied.



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

S. No	B. GENERAL CONDITIONS	Compliance
(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 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.	Noted and will be complied. MRPL phase III expansion has been detached From MSEZ phase I project vide EC amendment dated 13 th 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 language of the	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-1
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

S. No	B. GENERAL CONDITIONS	Compliance
	locality concerned and a copy of the same should be forwarded to the concerned Regional office of this Ministry.	
(xi)	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 fledged 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. The set up of laboratory facilities is under progress.

S. No	EC Amendment conditions dtd. 13 th 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 18 th 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 and details of CSR activity is attached as Annexure- II.
(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.



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

S. No	EC Amendment conditions dtd. 27 th 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.



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/2019-20/1

27 Dec, 2019

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

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 will be complied.
(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 Environmental issues and Safety aspects. Horticulture Dy. General Manager has appointed for development and maintenance of Green belt.

REGIONAL OFFICE

Karnataka State Pollution Control Board
Plot No.10-B, Balkampady Industrial Area
MANGALORE-57501



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

(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 horticulture/Landscape development within the Project site.	Works are completed.
(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	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



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

	submitted to SEIAA.	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 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.	Works are completed.
(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.



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

(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 control.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is 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.



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

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 22 nd 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 proposed 16.5 MLD STP by Mangalore City Corporation.
(ii)	Rainwater harvesting for roof run-off with sufficient capacity artificial pond at ground 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.	The project is development of R&R colonies. The scope of MSEZL is development of plots and hand over to PDF's. The building construction is in the scope of PDP'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	The green belt development is already taken up in Phase I (48 Acres) colony. Around 3000 trees are planted in an extent of 6.6 acres and 600 trees are planted in Bajpe R&R Colony and 8500 tree samplings are planted in other R&R colonies. The balance tree plantation in 22.5 Acres land will be taken in the year of 2020-22. Slope stabilization by vetiver grass taken up in 3 Acre area to check soil erosion.



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

	landscaped and covered with vegetation of indigenous variety.	
(vii)	Incremental pollution loads on the ambient air quality; noise and water quality should be periodically monitored after commissioning of the project.	Noted.
(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 (Environment) Dept. of	The complete sets of documents submitted to MoEF/SEIAA were forwarded as directed in the Conditions. MSEZL will comply in

(Signature)



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

	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.	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 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.	Noted. The advertisement was made in three local News papers and the copy of the same was forwarded to all concerned as directed.
(ix)	These stipulations would be enforced among others	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

	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.	
(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 1245 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 1619 families have vacated their houses and the process is in progress for the balance.

10 nos. R&R colonies developed - 1409 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" compensation in lieu of job and balance 756 nominees opted for the jobs. 600 nos. PDF nominees have already got employment out of 756 nos. empanelled.

With Regards

Sr. General Manager

Civil & Environment

Mangalore SEZ Ltd.

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

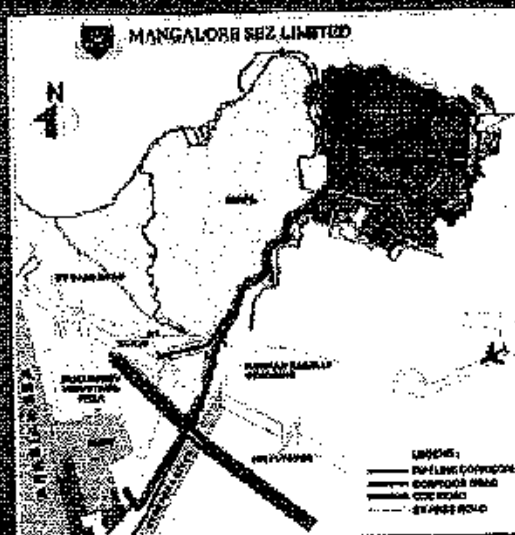


Mangalore SEZ Limited

ENVIRONMENTAL MONITORING REPORT

**AMBIENT AIR QUALITY
REPORT FOR THE MONTH OF MAY 2019**

Submitted to



Submitted By



M/s Hubert Enviro Care Systems Private Limited

(NABL Accredited & MOEF Recognized Laboratory)

7/C-45, Baikampady Industrial Estate, Mangaluru, Karnataka - 575011

Email: krom@hecs.in; kro@hecs.in

INDEX

Sr No	DESCRIPTION	Page No
1	Introduction - M SEZ	1
2	Environmental Monitoring	1
3	Scope and Methodology	1-9
3.1	Ambient Air Quality	1-9
4	Results	10
4.1	Ambient Air Quality	10-11
5	MSEZ Environmental Monitoring Schedule	12
6	Annexure	13-21

AMBIENT AIR QUALITY MONITORING REPORT - MAY 2019

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. ENVIRONMENTAL MONITORING

Environmental monitoring is being carried out at Mangalore SEZ, following guidelines and regulations of MoEF/CPCB and KSPCB statutory norms. In this regard, MSEZL has awarded the work to M/s Hubert EnviroCare Systems Pvt Ltd. and to monitor air quality, water quality & noise level for the three years. As per work order, during May 2019, we have conducted ambient air quality monitoring at 2 locations, namely, CETP and WTP area.

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 per month. The identified monitoring stations are: A₁-CETP & A₂-WTP 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 PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂-Nitrogen-dioxide; CO-Carbon Mono Oxide (DL 0.1 mg/m³); O₃-Ozone (DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni- (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³); B(a)P- Benzo-α-pyrene (DL 0.1 ng/m³) as per CPCB stipulation.

3.1.1. Sampling and analysis of PM_{2.5} and PM₁₀ in ambient air (Gravimetric Method)

- i. Condition a filter paper in oven (i.e. 10 or 2.5 µm diameter)
- ii. Prepare a sampling assembly by uncorking screws of the bracket
- iii. Take a tare (initial) weight of the filter paper (w_i mg)
- iv. Place the filter in the sampling system securely and tighten the screws of the bracket
- v. Set the timer for the period of sampling
- vi. Start the sampler and adjust flow rate to about 2L/ min for 24 hrs sampling
- vii. Note the flow rate at the end of the desired sampling period and stop the sampler
- viii. Transit the sampling train to environmental laboratory carefully with scientific precautions
- ix. Condition the filter paper again for the same period as was done prior to sampling.

Laboratory analysis:

Welghing of exposed samples:

- i. Take final weight of the exposed filter with a standard balance (w_f , mg)

Calculations:

- i. Average flow rate (initial and final flow rates) in L/ min

$$= (\text{Initial flow rate} + \text{final flow rate}) / 2$$
- ii. Total vol. of air sampled (TVA) in m^3

$$= \text{Avg. flow rate (L/min)} * 10^{-3} (m^3/L) * \text{sampling time (hr)} * 60 (min/hr)$$
- iii. Concentration of SPM in $\mu g/m^3$

$$= (w_f - w_i) (mg) / TVA (m^3) * 10^6 \mu g/m^3$$

3.1.2. Sampling and analysis of Sulphur dioxide

- i. Prepare absorbing reagent (sodium tetra-chloromercurate) by dissolving 27.2 g mercuric chloride and 11.7 g sodium chloride in 1 lit of water
- ii. Prepare a sampling train of at least 2 gas bubblers (for average reading) properly washed with distilled water and air dried.
- iii. Place bubblers in the sampling system securely connecting to the manifold. Check the connections of bubblers with the manifold and the inlet and outlet
- iv. Fill the bubblers with an absorbing reagent with an amount sufficient to last for 24 hours (approximately 15 ml for 8 hours sampling to 50 ml for 24 hours sampling)
- v. To eliminate interference of traces metals, if any, 1 drop of 0.01% EDTA solution to be added to the reagent prior to sampling ;similarly, effect of oxide of nitrogen also be eliminated by adding 1 ml of 0.06% sulphamic acid to the reagent at site
- vi. Start the sampler and adjust flow rate to 2 lit/ min.
- vii. Note the flow rate at the end of desired sampling period and stop the sampler
- viii. Translt the sampling train to environmental laboratory carefully with scientific precautions and preserve the sample tubes in a controlled environmental conditions

Laboratory analysis:**Calibration curve:**

- i. Prepare a standard solution of SO_2 concentrations ranging from 0 to 25 $\mu\text{g SO}_2$ by taking definite amount of std. sulphur dioxide solution in a 25 ml volumetric flasks
- ii. Add 14 ml of absorbing reagent and 1 ml of pararosaniline hydrochloride to each of the flasks making a total volume of 20 ml.
- iii. Measure absorbance for each flasks by spectrophotometer at 540 nm wavelength
- iv. Plot graph of absorbance v/s concentration

Absorbance in samples:

- i. Transfer samples to a 25 ml flask and develop colour as done in calibration curve
- ii. Measure absorbance at 540 nm
- iii. Find out the concentration (μgSO_2) corresponding to the measured absorbance from the calibration curve

Calculations:

- i. Average flow rate (if there is a significant difference in initial and final flow rates)
- ii. Total volume of air sampled (TVA) in m^3
= Avg. flow rate (lit) * 10^{-3} (m^3/lit) * sampling time (hr) * 60 (min/hr)
- iii. $\mu\text{gSO}_2/\text{TVA}$

3.1.3. Sampling and analysis of Nitrogen-di-oxide

- i. Prepare absorbing reagent (a solution of sodium hydroxide and arsenite) by dissolving 4 g sodium hydroxide and 1 g of sodium arsenite in 1 lit of distilled water
- ii. Prepare a sampling train of at least 2 gas bubblers (for average reading) properly washed with distilled water and air dried.
- iii. Place bubblers in the sampling system securely connecting to the manifold. Check the connections of bubblers with the manifold and the inlet and outlet
- iv. Fill the bubblers with an absorbing reagent with an amount sufficient to last for 24 hours (approximately 15 ml for 8 hours sampling to 50 ml for hours sampling)
- v. To eliminate interference of sulphur dioxide, drop of hydrogen peroxide could be added to the reagents to convert sulphur dioxide into sulphate during analysis
- vi. Start the sampler and adjust flow rate to about 0.2 lit/ min for 24 hours sampling
- vii. Note the flow rate at the end of desired sampling period and stop the sampler
- viii. Transit the sampling train to environmental laboratory carefully with scientific precautions and preserve the sample tubes in a controlled environmental conditions

Laboratory analysis:**Calibration curve:**

- i. Prepare a standard solution of NO_x concentrations ranging from 0 to 25 $\mu\text{g SO}_2$ by taking definite amount of std. sulphur dioxide solution in a 25 ml volumetric flasks
- ii. Add 14 ml of absorbing reagent and 1 ml of pararosaniline hydrochloride to each of the flasks making a total volume of 20 ml.
- iii. Measure absorbance for each flasks by spectrophotometer at 540 nm wavelength
- iv. Plot graph of absorbance v/s concentration

Absorbance in samples:

- i. Transfer samples to a 25 ml flask and develop colour as done in calibration curve
- ii. Measure absorbance at 540 nm
- iii. Find out the concentration ($\mu\text{g NO}_x$) corresponding to the measured absorbance from the calibration curve

Calculations:

- i. Average flow rate (If there is a significant difference in initial and final flow rates)
- ii. Total volume of air sampled (TVA) in m^3
$$= \text{Avg. flow rate (ltr)} * 10^{-3} (\text{m}^3/\text{ltr}) * \text{sampling time (hr)} * 60 (\text{min/hr})$$
$$\mu\text{gNO}_x/\text{TVA}$$

3.1.4. Sampling and analysis of Carbon Mono Oxide**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 is also possible with infra red analyzer. It however requires proper cleaning of the sampling train.

Steps:

- i. Calibration of analyzer can be carried out if required using standard gases
- ii. Sampler is allowed to warm up for some time before actual readings are taken till the sampler gives steady response and temperature stability

3.1.5. Sampling and analysis of Ozone**Dynamic calibration:**

- i. Dynamic calibration could be performed by preparing a large mixture of ozone in air
- ii. The output of an ozonizer is fed into the intake of a small blower delivering air. The mixture of gas however emerges through a short length of pipe
- iii. One portion of this mixture is analyzed in the recorder.
- iv. Another portion is analyzed through a faintly blue iodine solution containing starch and potassium iodide.
- v. Titrated this solution with sodium thiosulphate(0.1N)
- vi. The end point established by comparison with the blue starch- iodine solution
- vii. Mixture of ozone and air in polyester film bag could be prepared and admitted to the analyzer.
- viii. The mixture is analyzed at the time it is used since the ozone decomposes gradually
- ix. Analysis is then performed by passing a measured volume through an impinge containing buffered KI solution and determined the released iodine by spectrometer method
- x. Make the second mixture about midscale concentration and adjust sample or reagent flow rates until the recorder reading agrees with the absorbance scale according to the analytically determined concentration of ozone
- xi. Check several other points on the curve if desired and liner or logarithmic chart to be prepared followed by a calibration curve to read in ppm

Laboratory analysis:**Calibration curve:**

- i. Plot graph of absorbance v/s concentration

Procedure:

- i. Place a fresh absorbent solution in the storage bottle and operate the solution pump until the liquid are full
- ii. After the flow has stabilized itself, zero the recorder and start the air pump
- iii. Set the flow at convenient rates such as 4 ml/ min of solution and 4 l/min of air
- iv. Check and adjust the flow rates daily.
- v. Adjust the pH of the solution once or twice a week ,at time the solution shall be brought up to volume by addition of distilled water
- vi. Change the carbon filter about once a month. Also change the absorbing solution at the same time

3.1.6. Sampling and analysis of Ammonia:

Ammonia is collected in dilute Sulphuric acid solution in midget impingers to form Ammonium Sulphate. The solution is treated with Nessler's reagent to produce a yellow brown complex. The Ammonia concentration is determined by reading the absorption of the complex at 440 nm and comparing with a standard curve.

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 allowed 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 standing 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 217nm and 232nm 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 $\mu\text{g/ml}$.

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, m^3/min .

t = time in minutes.

ii. Metal Concentration:

$$C = (M_s - M_b) \times V_s \times F_a / V \times F_t$$

Where,

C = concentration, $\mu\text{g metal}/\text{m}^3$

M_s = metal concentration $\mu\text{g}/\text{mL}$

M_b = blank concentration $\mu\text{g}/\text{mL}$

V_s = total volume of extraction in mL

F_a = total area of exposed filter in cm^2

V = Volume of air sampled in m^3

F_t = 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 $C_{20}H_{12}$ having molecular weight 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 ($1.2\text{m}^3/\text{min}$) 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 Processing

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 $\sim 50\text{ ml}$ 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 ($50\text{ml} \times 2$ 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 $200\text{-}250\text{mm} \times 10\text{ mm}$ 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 $\text{ng}/\mu\text{l}$ 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 m³/min

T = sampling time, in min.

V = total sample volume at ambient conditions in m³

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

The concentration of PAH compound or Benzo(a)pyrene in ng /m³ in the air sampled is given by:

$$C \text{ (ng /m}^3\text{)} = C_s \times V_e / V_i \times V_s$$

Where,

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

V_e : Final volume of extract in μl (i.e 1000)

V_i : Injection Volume (i.e 1μl)

V_s : Volume of air sample in m³

4.0 Results

4.1 Ambient Air Quality

AMBIENT AIR QUALITY (AAQ) MONITORING TEST REPORT: MAY 2019

Name of the Industry	M/s. Mangalore SEZ Limited
Address of the Industry	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	WTP
Sampling Date	03.05.2019
Report Date	28.05.2019
Report No	HECS/AA/001/060519

Parameter Monitored	NAAQ Standard, 2009	Results
PM _{2.5} (µg/m ³)	60 [*]	31
PM ₁₀ (µg/m ³)	100 [*]	60
SO ₂ (µg/m ³)	80 [*]	20
NO ₂ (µg/m ³)	80 [*]	25
CO (mg/m ³)	2 ^{**}	BDL
O ₃ (µg/m ³)	100 ^{***}	BDL
NH ₃ (µg/m ³)	400 [*]	BDL
Pb (µg/m ³)	1 [*]	BDL
As (ng/m ³)	6 ^{***}	BDL
Ni (ng/m ³)	20 ^{***}	BDL
Benzene (µg/m ³)	5 ^{***}	BDL
B(a)P (ng/m ³)	1 ^{***}	BDL

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

Test Methods Followed:

PM₁₀ : 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)

SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)

NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)

O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)

NH₃ : 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)

C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)

B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

BDL =Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide(DL 0.1 mg/m³); O₃-Ozone(DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³); B(a)P- Benzo - α-pyrene (DL 0.1 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.



(Dr K GANESAN
Authorized Signatory

AMBIENT AIR QUALITY (AAQ) MONITORING TEST REPORT: MAY 2019

Name of the Industry	M/s. Mangalore SEZ Limited
Address of the Industry	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	CETP
Sampling Date	06.05.2019
Report Date	28.05.2019
Report No	HECS/AA/002/060519

CONSOLIDATED TEST RESULTS: MAY 2019

Parameter Monitored	NAAQ Standard, 2009	Results
PM _{2.5} (µg/m ³)	60 [*]	34
PM ₁₀ (µg/m ³)	100 [*]	63
SO ₂ (µg/m ³)	80 [*]	17
NO ₂ (µg/m ³)	80 [*]	22
CO (mg/m ³)	2 ^{**}	BDL
O ₃ (µg/m ³)	100 ^{**}	BDL
NH ₃ (µg/m ³)	400 [*]	BDL
Pb (µg/m ³)	1 [*]	BDL
As (ng/m ³)	6 ^{***}	BDL
Ni (ng/m ³)	20 ^{***}	BDL
Benzene (µg/m ³)	5 ^{***}	BDL
B(a)P (ng/m ³)	1 ^{***}	BDL

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

Test Methods Followed:

PM₁₀ : 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)
 SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
 NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
 O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
 NH₃ : 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)
 C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
 B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

BDL -Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide(DL 0.1 mg/m³); O₃-Ozone(DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³); B(a)P- Benzo-α-pyrene (DL 0.1 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.



(Dr K GANESAN)
Authorized Signatory

5. 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	PM _{2.5} , PM ₁₀ , SO ₂ , NO ₂ , CO, O ₃ , NH ₃ , Pb, As, Ni, Benzene, B(a)P	Two Locations/Month, 24 hrs/day
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, Carbon monoxide, 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, Seasons (Summer, Winter, Post monsoon), By using Grab Sampling technique
3	Ambient Noise Level	Noise Level (db) in Day and Night	Two Locations, Seasons (Summer, Winter, Post monsoon), Fortnightly interval



AMBIENT AIR QUALITY REPORT FOR THE MONTH OF JUNE 2019

Submitted to



(NABL Accredited & MOEF Recognized Laboratory)

7/C-45, Baikampady Industrial Estate, Mangaluru, Karnataka - 575011

Email: krom@hecs.in; kro@hecs.in

INDEX

Sl. No.	DESCRIPTION	Page No.
1	Introduction - M SEZ	1
2	Environmental Monitoring	1
3	Scope and Methodology	1-9
3.1	Ambient Air Quality	1-9
4	Results	10
4.1	Ambient Air Quality	10-11
5	MSEZ Environmental Monitoring Schedule	12
6	Annexure	13-16

AMBIENT AIR QUALITY MONITORING REPORT - JUNE 2019

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. ENVIRONMENTAL MONITORING

Environmental monitoring is being carried out at Mangalore SEZ, following guidelines and regulations of MoEF/CPCB and KSPCB statutory norms. In this regard, MSEZL has awarded the work to M/s Hubert EnviroCare Systems Pvt Ltd. and to monitor air quality, water quality & noise level for the three years. As per work order, during June 2019, we have conducted ambient air quality monitoring at 2 locations, namely, CETP and WTP area.

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 per month. The identified monitoring stations are: A₁-CETP & A₂-WTP 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 PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂-Nitrogen-di-oxide; CO-Carbon Mono Oxide (DL 0.1 mg/m³); O₃-Ozone (DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni- (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³); B(α)P- Benzo-α-pyrene (DL 0.1 ng/m³) as per CPCB stipulation.

3.1.1. Sampling and analysis of PM_{2.5} and PM₁₀ in ambient air (Gravimetric Method)

- i. Condition a filter paper in oven (i.e. 10 or 2.5 µm diameter)
- ii. Prepare a sampling assembly by uncorking screws of the bracket
- iii. Take a tare (Initial) weight of the filter paper (w_i , mg)
- iv. Place the filter in the sampling system securely and tighten the screws of the bracket
- v. Set the timer for the period of sampling
- vi. Start the sampler and adjust flow rate to about 2L/ min for 24 hrs sampling
- vii. Note the flow rate at the end of the desired sampling period and stop the sampler
- viii. Transit the sampling train to environmental laboratory carefully with scientific precautions
- ix. Condition the filter paper again for the same period as was done prior to sampling.

Laboratory analysis:

Weighing of exposed samples:

- i. Take final weight of the exposed filter with a standard balance (w_f , mg)

Calculations:

- i. Average flow rate (initial and final flow rates) in L/ min

$$= (\text{Initial flow rate} + \text{final flow rate}) / 2$$
- ii. Total vol. of air sampled (TVA) in m^3

$$= \text{Avg. flow rate (L/min)} \times 10^{-3} (m^3/L) \times \text{sampling time (hr)} \times 60 (min/hr)$$
- iii. Concentration of SPM in $\mu g/m^3$

$$= (w_f - w_i) (mg) / TVA (m^3) \times 10^6 \mu g/m^3$$

3.1.2. Sampling and analysis of Sulphur dioxide

- i. Prepare absorbing reagent (sodium tetra-chloromercurate) by dissolving 27.2 g mercuric chloride and 11.7 g sodium chloride in 1 lit of water
- ii. Prepare a sampling train of at least 2 gas bubblers (for average reading) properly washed with distilled water and air dried.
- iii. Place bubblers in the sampling system securely connecting to the manifold. Check the connections of bubblers with the manifold and the inlet and outlet
- iv. Fill the bubblers with an absorbing reagent with an amount sufficient to last for 24 hours (approximately 15 ml for 8 hours sampling to 50 ml for 24 hours sampling)
- v. To eliminate interference of traces metals, if any, 1 drop of 0.01% EDTA solution to be added to the reagent prior to sampling ;similarly, effect of oxide of nitrogen also be eliminated by adding 1 ml of 0.06% sulphamic acid to the reagent at site
- vi. Start the sampler and adjust flow rate to 2 lit/ min.
- vii. Note the flow rate at the end of desired sampling period and stop the sampler
- viii. Transit the sampling train to environmental laboratory carefully with scientific precautions and preserve the sample tubes in a controlled environmental conditions

Laboratory analysis:**Calibration curve:**

- i. Prepare a standard solution of SO_2 concentrations ranging from 0 to 25 $\mu\text{g SO}_2$ by taking definite amount of std. sulphur dioxide solution in a 25 ml volumetric flasks
- ii. Add 14 ml of absorbing reagent and 1 ml of pararosaniline hydrochloride to each of the flasks making a total volume of 20 ml.
- iii. Measure absorbance for each flasks by spectrophotometer at 540 nm wavelength
- iv. Plot graph of absorbance v/s concentration

Absorbance in samples:

- i. Transfer samples to a 25 ml flask and develop colour as done in calibration curve
- ii. Measure absorbance at 540 nm
- iii. Find out the concentration (μgSO_2) corresponding to the measured absorbance from the calibration curve

Calculations:

- i. Average flow rate (if there is a significant difference in initial and final flow rates)
- ii. Total volume of air sampled (TVA) in m^3
= Avg. flow rate (lit) * 10^{-3} (m^3/lit) * sampling time (hr) * 60 (min/hr)
- iii. $\mu\text{gSO}_2/\text{TVA}$

3.1.3. Sampling and analysis of Nitrogen-di-oxide

- i. Prepare absorbing reagent (a solution of sodium hydroxide and arsenite) by dissolving 4 g sodium hydroxide and 1 g of sodium arsenite in 1 lit of distilled water
- ii. Prepare a sampling train of at least 2 gas bubblers (for average reading) properly washed with distilled water and air dried.
- iii. Place bubblers in the sampling system securely connecting to the manifold. Check the connections of bubblers with the manifold and the inlet and outlet
- iv. Fill the bubblers with an absorbing reagent with an amount sufficient to last for 24 hours (approximately 15 ml for 8 hours sampling to 50 ml for hours sampling)
- v. To eliminate interference of sulphur dioxide, drop of hydrogen peroxide could be added to the reagents to convert sulphur dioxide into sulphate during analysis
- vi. Start the sampler and adjust flow rate to about 0.2 lit/ min for 24 hours sampling
- vii. Note the flow rate at the end of desired sampling period and stop the sampler
- viii. Transit the sampling train to environmental laboratory carefully with scientific precautions and preserve the sample tubes in a controlled environmental conditions

Laboratory analysis:**Calibration curve:**

- i. Prepare a standard solution of NO_x concentrations ranging from 0 to 25 $\mu\text{g SO}_2$ by taking definite amount of std. sulphur dioxide solution in a 25 ml volumetric flasks
- ii. Add 14 ml of absorbing reagent and 1 ml of pararosaniline hydrochloride to each of the flasks making a total volume of 20 ml.
- iii. Measure absorbance for each flasks by spectrophotometer at 540 nm wavelength
- iv. Plot graph of absorbance v/s concentration

Absorbance in samples:

- i. Transfer samples to a 25 ml flask and develop colour as done in calibration curve
- ii. Measure absorbance at 540 nm
- iii. Find out the concentration ($\mu\text{g NO}_x$) corresponding to the measured absorbance from the calibration curve

Calculations:

- i. Average flow rate (if there is a significant difference in initial and final flow rates)
- ii. Total volume of air sampled (TVA) in m^3
$$= \text{Avg. flow rate (lit)} * 10^{-3} (\text{m}^3/\text{lit}) * \text{sampling time (hr)} * 60 (\text{min/hr})$$
$$\mu\text{gNO}_x/\text{TVA}$$

3.1.4. Sampling and analysis of Carbon Mono Oxide**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 is also possible with infra red analyzer. It however requires proper cleaning of the sampling train.

Steps:

- i. Calibration of analyzer can be carried out if required using standard gases
- ii. Sampler is allowed to warm up for some time before actual readings are taken till the sampler gives steady response and temperature stability

3.1.5. Sampling and analysis of Ozone**Dynamic calibration:**

- i. Dynamic calibration could be performed by preparing a large mixture of ozone in air
- ii. The output of an ozonizer is fed into the intake of a small blower delivering air. The mixture of gas however emerges through a short length of pipe
- iii. One portion of this mixture is analyzed in the recorder.
- iv. Another portion is analyzed through a faintly blue iodine solution containing starch and potassium iodide.
- v. Titrated this solution with sodium thiosulphate(0.1N)
- vi. The end point established by comparison with the blue starch- iodine solution
- vii. Mixture of ozone and air in polyester film bag could be prepared and admitted to the analyzer.
- viii. The mixture is analyzed at the time it is used since the ozone decomposes gradually
- ix. Analysis is then performed by passing a measured volume through an impinge containing buffered KI solution and determined the released iodine by spectrometer method
- x. Make the second mixture about midscale concentration and adjust sample or reagent flow rates until the recorder reading agrees with the absorbance scale according to the analytically determined concentration of ozone
- xi. Check several other points on the curve if desired and liner or logarithmic chart to be prepared followed by a calibration curve to read in ppm

Laboratory analysis:**Calibration curve:**

- i. Plot graph of absorbance v/s concentration

Procedure:

- i. Place a fresh absorbent solution in the storage bottle and operate the solution pump until the liquid are full
- ii. After the flow has stabilized itself, zero the recorder and start the air pump
- iii. Set the flow at convenient rates such as 4 ml/ min of solution and 4 l/min of air
- iv. Check and adjust the flow rates daily.
- v. Adjust the pH of the solution once or twice a week ,at time the solution shall be brought up to volume by addition of distilled water
- vi. Change the carbon filter about once a month. Also change the absorbing solution at the same time

3.1.6. Sampling and analysis of Ammonia:

Ammonia is collected in dilute Sulphuric acid solution in midget impingers to form Ammonium Sulphate. The solution is treated with Nessler's reagent to produce a yellow brown complex. The Ammonia concentration is determined by reading the absorption of the complex at 440 nm and comparing with a standard curve.

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% HNO₃ & 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 allowed 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 standing 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 % HNO₃/8% 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 217nm and 232nm 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 $\mu\text{g/ml}$.

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, m^3/min .

t = time in minutes.

ii. Metal Concentration:

$$C = (M_s - M_b) \times V_s \times F_a / V \times F_t$$

Where,

C = concentration, $\mu\text{g metal}/\text{m}^3$

M_s = metal concentration $\mu\text{g/mL}$

M_b = blank concentration $\mu\text{g/mL}$

V_s = total volume of extraction in mL

F_a = total area of exposed filter in cm^2

V = Volume of air sampled in m^3

F_t = 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 $C_{20}H_{12}$ having molecular weight 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 ($1.2\text{m}^3/\text{min}$) sampling method capable of detecting $\text{sub-ng}/\text{m}^3$ concentration of PAH in 24 hours sample (i.e. collected in 3 shifts of 8 hour each with 480m^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 Processing

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 $200\text{-}250\text{mm} \times 10\text{mm}$ 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 $\text{ng}/\mu\text{L}$ 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 m³/min

T = sampling time, in min.

V = total sample volume at ambient conditions in m³

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

The concentration of PAH compound or Benzo(a)pyrene in ng /m³ in the air sampled is given by:

$$C \text{ (ng /m}^3\text{)} = C_s \times V_e / V_i \times V_s$$

Where,

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

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

V_i : Injection Volume (i.e 1μl)

V_s : Volume of air sample in m³

4.0 Results

4.1 Ambient Air Quality

AMBIENT AIR QUALITY (AAQ) MONITORING TEST REPORT: JUNE 2019

Name of the Industry	M/s. Mangalore SEZ Limited
Address of the Industry	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	WTP
Sampling Date	19.06.2019
Report Date	03.07.2019
Report No	HECS/AA/001/190619

Parameter Monitored	NAAQ Standard, 2009	Results
PM _{2.5} (µg/m ³)	60 [*]	24
PM ₁₀ (µg/m ³)	100 [*]	49
SO ₂ (µg/m ³)	80 [*]	17
NO ₂ (µg/m ³)	80 [*]	23
CO (mg/m ³)	2 ^{**}	BDL
O ₃ (µg/m ³)	100 ^{***}	BDL
NH ₃ (µg/m ³)	400 [*]	BDL
Pb (µg/m ³)	1 [*]	BDL
As (ng/m ³)	6 ^{***}	BDL
Ni (ng/m ³)	20 ^{***}	BDL
Benzene (µg/m ³)	5 ^{***}	BDL
B(a)P (ng/m ³)	1 ^{***}	BDL

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

Test Methods Followed:

- PM₁₀ : IS 5182 (Pt 23): 2006 (RA 2017) (Gravimetric)
 PM_{2.5} : HECS/AIR/SOP/002 Issue 02 dt. 19.06.2018 based on CPCB guidelines vol. I (2011)
 SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
 NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
 O₃ : HECS/AIR/SOP/005 Issue 02 dt. 19.06.2018 based on CPCB guidelines vol. I (2011)
 NH₃ : HECS/AIR/SOP/006 Issue 02 dt. 19.06.2018 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)
 C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
 B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

BDL =Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide(DL 0.1 mg/m³); O₃-Ozone(DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³); B(a)P- Benzo-α-pyrene (DL 0.1 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.



(Dr K GANESAN
Authorized Signatory

AMBIENT AIR QUALITY (AAQ) MONITORING TEST REPORT: JUNE 2019

Name of the Industry	M/s. Mangalore SEZ Limited
Address of the Industry	3 rd Floor, MUJDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	CETP
Sampling Date	18.06.2019
Report Date	03.07.2019
Report No	HECS/AA/001/180619

CONSOLIDATED TEST RESULTS: JUNE 2019

Parameter Monitored	NAAQ Standard, 2009	Results
PM _{2.5} (µg/m ³)	60 [*]	27
PM ₁₀ (µg/m ³)	100 [*]	53
SO ₂ (µg/m ³)	80 [*]	19
NO ₂ (µg/m ³)	80 [*]	24
CO (mg/m ³)	2 ^{**}	BDL
O ₃ (µg/m ³)	100 ^{**}	BDL
NH ₃ (µg/m ³)	400 [*]	BDL
Pb (µg/m ³)	1 [*]	BDL
As (ng/m ³)	6 ^{***}	BDL
Ni (ng/m ³)	20 ^{***}	BDL
Benzene (µg/m ³)	5 ^{***}	BDL
B(a)P (ng/m ³)	1 ^{***}	BDL

Note: ^{*} 24 hours average; ^{**} 8 hours average; ^{***} Annual average

Test Methods Followed:

PM₁₀ : 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)
 SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
 NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
 O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
 NH₃ : 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)
 C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
 B(a)P : In-house validated method based on CPCB guidelines vol. I (2011).

BDL =Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide(DL 0.1 mg/m³); O₃-Ozone(DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³); B(a)P- Benzo-α-pyrene (DL 0.1 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.




 (Dr K GANESAN)
 Authorized Signatory

5. MONITORING SCHEDULE OF MANGALORE SEZ LIMITED

ENVIRONMENTAL MONITORING

SLNo	Environmental Attributes monitored	Parameters analyzed and presented in analysis Report	Monitoring requirement
1	Ambient Air Quality	PM _{2.5} , PM ₁₀ , SO ₂ , NO ₂ , CO, O ₃ , NH ₃ , Pb, As, Ni, Benzene, B(a)P	Two Locations/Month, 24 hrs/day
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, Carbon monoxide, 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 , <i>E.Coli</i>	Ten Locations, Seasons (Summer, Winter, Post monsoon), By using Grab Sampling technique
3	Ambient Noise Level	Noise Level (db) in Day and Night	Two Locations, Seasons (Summer, Winter, Post monsoon), Fortnightly interval

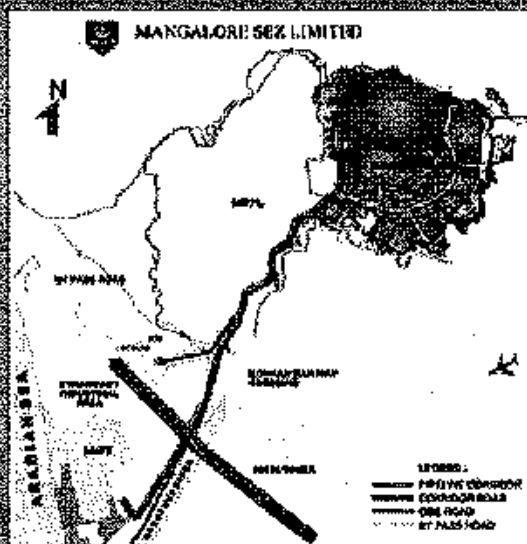


Mangalore SEZ Limited

ENVIRONMENTAL MONITORING REPORT

AMBIENT AIR QUALITY REPORT FOR THE MONTH OF JULY 2019

Submitted to



Submitted By



M/s Hubert Enviro Care Systems Private Limited

(NABL Accredited & MOEF Recognized Laboratory)

7/C-45, Baikampady Industrial Estate, Mangaluru, Karnataka - 575011

Email: krom@hecs.in; kro@hecs.in

INDEX

Sl. No	DESCRIPTION	Page No
1	Introduction - M SEZ	1
2	Environmental Monitoring	1
3	Scope and Methodology	1-9
3.1	Ambient Air Quality	1-9
4	Results	10
4.1	Ambient Air Quality	10-11
5	MSEZ Environmental Monitoring Schedule	12
6	Annexure	I-X

AMBIENT AIR QUALITY MONITORING REPORT - JULY 2019

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. ENVIRONMENTAL MONITORING

Environmental monitoring is being carried out at Mangalore SEZ, following guidelines and regulations of MoEF/CPCB and KSPCB statutory norms. In this regard, MSEZL has awarded the work to M/s Hubert EnviroCare Systems Pvt Ltd. and to monitor air quality, water quality & noise level for the three years. As per work order, during July 2019, we have conducted ambient air quality monitoring at 2 locations, namely, CETP and WTP area.

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 per month. The identified monitoring stations are: A₁-CETP & A₂-WTP 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 PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂-Nitrogen-dioxide; CO-Carbon Mono Oxide (DL 0.1 mg/m³); O₃-Ozone (DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni- (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³); B(a)P- Benzo-α-pyrene (DL 0.1 ng/m³) as per CPCB stipulation.

3.1.1. Sampling and analysis of $PM_{2.5}$ and PM_{10} in ambient air (Gravimetric Method)

- i. Condition a filter paper in oven (i.e. 10 or 2.5 μm diameter)
- ii. Prepare a sampling assembly by uncorking screws of the bracket
- iii. Take a tare (initial) weight of the filter paper (w_i , mg)
- iv. Place the filter in the sampling system securely and tighten the screws of the bracket
- v. Set the timer for the period of sampling
- vi. Start the sampler and adjust flow rate to about 2L/ min for 24 hrs sampling
- vii. Note the flow rate at the end of the desired sampling period and stop the sampler
- viii. Transit the sampling train to environmental laboratory carefully with scientific precautions
- ix. Condition the filter paper again for the same period as was done prior to sampling.

Laboratory analysis:

Weighing of exposed samples:

- i. Take final weight of the exposed filter with a standard balance (w_f , mg)

Calculations:

- i. Average flow rate (Initial and final flow rates) in L/ min

$$= (\text{Initial flow rate} + \text{final flow rate}) / 2$$
- ii. Total vol. of air sampled (TVA) in m^3

$$= \text{Avg. flow rate (L/min)} * 10^{-3} (m^3/L) * \text{sampling time (hr)} * 60 (min/hr)$$
- iii. Concentration of SPM in $\mu g/m^3$

$$= (w_f - w_i) (mg) / TVA (m^3) * 10^6 \mu g/m^3$$

3.1.2. Sampling and analysis of Sulphur dioxide

- i. Prepare absorbing reagent (sodium tetra-chloromercurate) by dissolving 27.2 g mercuric chloride and 11.7 g sodium chloride in 1 lit of water
- ii. Prepare a sampling train of at least 2 gas bubblers (for average reading) properly washed with distilled water and air dried.
- iii. Place bubblers in the sampling system securely connecting to the manifold. Check the connections of bubblers with the manifold and the inlet and outlet
- iv. Fill the bubblers with an absorbing reagent with an amount sufficient to last for 24 hours (approximately 15 ml for 8 hours sampling to 50 ml for 24 hours sampling)
- v. To eliminate interference of traces metals, if any, 1 drop of 0.01% EDTA solution to be added to the reagent prior to sampling ;similarly, effect of oxide of nitrogen also be eliminated by adding 1 ml of 0.06% sulphamic acid to the reagent at site
- vi. Start the sampler and adjust flow rate to 2 lit/ min.
- vii. Note the flow rate at the end of desired sampling period and stop the sampler
- viii. Transit the sampling train to environmental laboratory carefully with scientific precautions and preserve the sample tubes in a controlled environmental conditions

Laboratory analysis:**Calibration curve:**

- i. Prepare a standard solution of SO_2 concentrations ranging from 0 to 25 $\mu\text{g SO}_2$ by taking definite amount of std. sulphur dioxide solution in a 25 ml volumetric flasks
- ii. Add 14 ml of absorbing reagent and 1 ml of pararosaniline hydrochloride to each of the flasks making a total volume of 20 ml.
- iii. Measure absorbance for each flasks by spectrophotometer at 540 nm wavelength
- iv. Plot graph of absorbance v/s concentration

Absorbance in samples:

- i. Transfer samples to a 25 ml flask and develop colour as done in calibration curve
- ii. Measure absorbance at 540 nm
- iii. Find out the concentration (μgSO_2) corresponding to the measured absorbance from the calibration curve

Calculations:

- i. Average flow rate (If there is a significant difference in initial and final flow rates)
- ii. Total volume of air sampled (TVA) in m^3
$$= \text{Avg. flow rate (lit)} \times 10^{-3} (\text{m}^3/\text{lit}) \times \text{sampling time (hr)} \times 60 (\text{min/hr})$$
- iii. $\mu\text{gSO}_2/\text{TVA}$

3.1.3. Sampling and analysis of Nitrogen-di-oxide

- i. Prepare absorbing reagent (a solution of sodium hydroxide and arsenite) by dissolving 4 g sodium hydroxide and 1 g of sodium arsenite in 1 lit of distilled water
- ii. Prepare a sampling train of at least 2 gas bubblers (for average reading) properly washed with distilled water and air dried.
- iii. Place bubblers in the sampling system securely connecting to the manifold. Check the connections of bubblers with the manifold and the inlet and outlet
- iv. Fill the bubblers with an absorbing reagent with an amount sufficient to last for 24 hours (approximately 15 ml for 8 hours sampling to 50 ml for hours sampling)
- v. To eliminate interference of sulphur dioxide, drop of hydrogen peroxide could be added to the reagents to convert sulphur dioxide into sulphate during analysis
- vi. Start the sampler and adjust flow rate to about 0.2 lit/ min for 24 hours sampling
- vii. Note the flow rate at the end of desired sampling period and stop the sampler
- viii. Transit the sampling train to environmental laboratory carefully with scientific precautions and preserve the sample tubes in a controlled environmental conditions

Laboratory analysis:**Calibration curve:**

- i. Prepare a standard solution of NO_x concentrations ranging from 0 to 25 $\mu\text{g SO}_2$ by taking definite amount of std. sulphur dioxide solution in a 25 ml volumetric flasks
- ii. Add 14 ml of absorbing reagent and 1 ml of pararosaniline hydrochloride to each of the flasks making a total volume of 20 ml.
- iii. Measure absorbance for each flasks by spectrophotometer at 540 nm wavelength
- iv. Plot graph of absorbance v/s concentration

Absorbance in samples:

- i. Transfer samples to a 25 ml flask and develop colour as done in calibration curve
- ii. Measure absorbance at 540 nm
- iii. Find out the concentration ($\mu\text{g NO}_x$) corresponding to the measured absorbance from the calibration curve

Calculations:

- i. Average flow rate (If there is a significant difference in initial and final flow rates)
- ii. Total volume of air sampled (TVA) in m^3
$$= \text{Avg. flow rate (lit)} \times 10^{-3} (\text{m}^3/\text{lit}) \times \text{sampling time (hr)} \times 60 (\text{min/hr})$$
$$\mu\text{gNO}_x/\text{TVA}$$

3.1.4. Sampling and analysis of Carbon Mono Oxide**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 is also possible with infra red analyzer. It however requires proper cleaning of the sampling train.

Steps:

- i. Calibration of analyzer can be carried out if required using standard gases
- ii. Sampler is allowed to warm up for some time before actual readings are taken till the sampler gives steady response and temperature stability

3.1.5. Sampling and analysis of Ozone**Dynamic calibration:**

- i. Dynamic calibration could be performed by preparing a large mixture of ozone in air
- ii. The output of an ozonizer is fed into the intake of a small blower delivering air. The mixture of gas however emerges through a short length of pipe
- iii. One portion of this mixture is analyzed in the recorder.
- iv. Another portion is analyzed through a faintly blue iodine solution containing starch and potassium iodide.
- v. Titrated this solution with sodium thiosulphate(0.1N)
- vi. The end point established by comparison with the blue starch-iodine solution
- vii. Mixture of ozone and air in polyester film bag could be prepared and admitted to the analyzer.
- viii. The mixture is analyzed at the time it is used since the ozone decomposes gradually
- ix. Analysis is then performed by passing a measured volume through an impinge containing buffered KI solution and determined the released iodine by spectrometer method
- x. Make the second mixture about midscale concentration and adjust sample or reagent flow rates until the recorder reading agrees with the absorbance scale according to the analytically determined concentration of ozone
- xi. Check several other points on the curve if desired and liner or logarithmic chart to be prepared followed by a calibration curve to read in ppm

Laboratory analysis:**Calibration curve:**

- i. Plot graph of absorbance v/s concentration

Procedure:

- i. Place a fresh absorbent solution in the storage bottle and operate the solution pump until the liquid are full
- ii. After the flow has stabilized itself, zero the recorder and start the air pump
- iii. Set the flow at convenient rates such as 4 ml/ min of solution and 4 l/min of air
- iv. Check and adjust the flow rates daily.
- v. Adjust the pH of the solution once or twice a week ,at time the solution shall be brought up to volume by addition of distilled water
- vi. Change the carbon filter about once a month. Also change the absorbing solution at the same time

3.1.6. Sampling and analysis of Ammonia:

Ammonia is collected in dilute Sulphuric acid solution in midget impingers to form Ammonium Sulphate. The solution is treated with Nessler's reagent to produce a yellow brown complex. The Ammonia concentration is determined by reading the absorption of the complex at 440 nm and comparing with a standard curve.

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 allowed 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 standing 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:

L. 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 217nm and 232nm 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, m³

Q = average sampling rate, m³/min.

t = time in minutes.

ii. Metal Concentration:

$$C = (M_s - M_b) \times V_s \times F_a / V \times F_t$$

Where,

C = concentration, µg metal/m³

M_s = metal concentration µg/mL

M_b = blank concentration µg/mL

V_s = total volume of extraction in mL

F_a = total area of exposed filter in cm²

V = Volume of air sampled in m³

F_t = Area of filter taken for digestion in cm²

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 $C_{20}H_{12}$ having molecular weight 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 ($1.2\text{ m}^3/\text{min}$) 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 Processing

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 $\sim 50\text{ ml}$. 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 ($50\text{ ml} \times 2\text{ times}$) 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 $200\text{-}250\text{ mm} \times 10\text{ mm}$ 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 $\text{ng}/\mu\text{L}$ 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 m³/min

T = sampling time, in min.

V = total sample volume at ambient conditions in m³

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

The concentration of PAH compound or Benzo(a)pyrene in ng /m³ in the air sampled is given by:

$$C \text{ (ng /m}^3\text{)} = C_s \times V_e / V_i \times V_s$$

Where,

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

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

V_i : Injection Volume (i.e 1μl)

V_s : Volume of air sample in m³

AMBIENT AIR QUALITY (AAQ) MONITORING TEST REPORT: JULY 2019

Name of the Industry	M/s. Mangalore SEZ Limited
Address of the Industry	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	CETP
Sampling Date	11.07.2019
Report Date	03.08.2019
Report No	HECS/AA/001/030819

CONSOLIDATED TEST RESULTS: JULY 2019

Parameter Monitored	NAAQ Standard, 2009	Results
PM _{2.5} ($\mu\text{g}/\text{m}^3$)	60 [*]	24
PM ₁₀ ($\mu\text{g}/\text{m}^3$)	100 [*]	49
SO ₂ ($\mu\text{g}/\text{m}^3$)	80 [*]	18
NO ₂ ($\mu\text{g}/\text{m}^3$)	80 [*]	22
CO (mg/m^3)	2 ^{**}	BDL
O ₃ ($\mu\text{g}/\text{m}^3$)	100 ^{***}	BDL
NH ₃ ($\mu\text{g}/\text{m}^3$)	400 [*]	BDL
Pb ($\mu\text{g}/\text{m}^3$)	1 [*]	BDL
As (ng/m^3)	6 ^{***}	BDL
Ni (ng/m^3)	20 ^{***}	BDL
Benzene ($\mu\text{g}/\text{m}^3$)	5 ^{***}	BDL
B(a)P (ng/m^3)	1 ^{***}	BDL

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

Test Methods Followed:

- PM₁₀ : 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)
 SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
 NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
 O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
 NH₃ : 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)
 C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
 B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

BDL =Below detection limit; DL = Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide(DL 0.1 mg/m³); O₃-Ozone(DL 10 $\mu\text{g}/\text{m}^3$); NH₃-Ammonia (DL 5 $\mu\text{g}/\text{m}^3$); Pb-Lead (DL 0.05 $\mu\text{g}/\text{m}^3$); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene-(DL 1 $\mu\text{g}/\text{m}^3$); B(a)P- Benzo- α -pyrene (DL 0.1 ng/m³); ng/m³: nanogram per cubic meter; $\mu\text{g}/\text{m}^3$ - microgram per cubic meter.



(Dr K GANESAN
Authorized Signatory

4.0 Results

4.1 Ambient Air Quality

AMBIENT AIR QUALITY (AAQ) MONITORING TEST REPORT: JULY 2019

Name of the Industry	M/s. Mangalore SEZ Limited
Address of the Industry	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	WTP
Sampling Date	12.07.2019
Report Date	03.08.2019
Report No	HECS/AA/002/030819

Parameter Monitored	NAAQ Standard, 2009	Results
PM _{2.5} ($\mu\text{g}/\text{m}^3$)	60 [*]	21
PM ₁₀ ($\mu\text{g}/\text{m}^3$)	100 [*]	45
SO ₂ ($\mu\text{g}/\text{m}^3$)	80 [*]	15
NO ₂ ($\mu\text{g}/\text{m}^3$)	80 [*]	21
CO (mg/m^3)	2 ^{**}	BDL
O ₃ ($\mu\text{g}/\text{m}^3$)	100 ^{**}	BDL
NH ₃ ($\mu\text{g}/\text{m}^3$)	400 [*]	BDL
Pb ($\mu\text{g}/\text{m}^3$)	1 [*]	BDL
As (ng/m^3)	6 ^{***}	BDL
Ni (ng/m^3)	20 ^{***}	BDL
Benzene ($\mu\text{g}/\text{m}^3$)	5 ^{***}	BDL
B(a)P (ng/m^3)	1 ^{***}	BDL

Note: ^{*} 24 hours average; ^{**} 8 hours average; ^{***} Annual average

Test Methods Followed:

PM₁₀ : 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)
 SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
 NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
 O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
 NH₃ : 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)
 C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
 B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

BDL =Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide(DL 0.1 mg/m³); O₃-Ozone(DL 10 $\mu\text{g}/\text{m}^3$); NH₃-Ammonia (DL 5 $\mu\text{g}/\text{m}^3$); Pb-Lead (DL 0.05 $\mu\text{g}/\text{m}^3$); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene-(DL 1 $\mu\text{g}/\text{m}^3$); B(a)P- Benzo - α -pyrene (DL 0.1 ng/m³); ng/m³: nanogram per cubic meter; $\mu\text{g}/\text{m}^3$ - microgram per cubic meter.



(Dr K GANESAN
Authorized Signatory

5. 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	PM _{2.5} , PM ₁₀ , SO ₂ , NO ₂ , CO, O ₃ , NH ₃ , Pb, As, Ni, Benzene, B(α)P	Two Locations/Month, 24 hrs/day
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, Carbon monoxide, 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 , <i>E.Coli</i>	Ten Locations, Seasons (Summer, Winter, Post monsoon), By using Grab Sampling technique
3	Ambient Noise Level	Noise Level (db) in Day and Night	Two Locations, Seasons (Summer, Winter, Post monsoon), Fortnightly interval



Email: kron@hcs.in; kro@hecs.in

INDEX

Sl. No	Reference	Page No
1	Introduction - M SEZ	1
2	Environmental Monitoring	1
3	Scope and Methodology	1-10
3.1	Ambient Air Quality	1-8
3.2	Noise Level	8-9
3.3	Water Quality	9-10
4	Results	11
4.1	Ambient Air Quality	11-12
4.2	Noise Level	13-14
4.3	Water Quality	15-24
5	MSEZ Environmental Monitoring Schedule	25
6	Annexure	26 (i-x)

AMBIENT AIR, WATER QUALITY AND NOISE MONITORING REPORT - AUGUST 2019

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 MoEFCC/CPCB and KSPCB statutory norms. In this regard, MSEZL has awarded the work to M/s Hubert EnviroCare Systems Pvt Ltd. and to monitor air quality, water quality & noise level for the three years. As per work order, during August 2019, we have conducted ambient air quality, ground water quality and noise level monitoring at 2, 10 and 2 locations respectively.

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 per month. The identified monitoring stations are: A₁-CETP & A₂-WTP 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 PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂-Nitrogen-di-oxide; CO-Carbon Mono Oxide (DL 0.1 mg/m³); O₃-Ozone (DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni- Nickel (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³); B(a)P- Benzo-α-pyrene(DL 0.1 ng/m³) as per CPCB stipulation.

3.1.1. Sampling and analysis of PM_{2.5} 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 eight or 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 PM_{2.5} in $\mu\text{g}/\text{m}^3$ (wf, mg)

Calculations:

- i. Average flow rate (initial and final flow rates) in L/ min

$$= (\text{Initial flow rate} + \text{final flow rate}) / 2$$
- ii. Total vol. of air sampled (TVA) in m^3

$$= \text{Avg. flow rate (L/min)} * 10^{-3} (\text{m}^3/\text{L}) * \text{sampling time (hr)} * 60 (\text{min/hr})$$
- iii. Concentration of PM in $\mu\text{g}/\text{m}^3$

$$= (w_f - w_i (\text{mg})) / \text{TVA} (\text{m}^3) * 10^6 \mu\text{g}/\text{m}^3$$

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 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 $\mu\text{g}/\text{m}^3$

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 $\mu\text{g}/\text{m}^3$

3.1.4. Sampling and analysis of Carbon Mono Oxide

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.

Steps:

- i. Calibration of analyzer can be carried out if required using standard gases
- ii. Sampler is allowed to warm up for some time before actual readings are taken till the sampler gives steady response and temperature stability

3.1.5. Sampling and analysis of Ozone

- i. Place 10 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 at 352 nm against a reference cuvette containing de ionized water
- viii. Calculate concentration using calibration graph
- ix. Calculate concentration of Ozone in $\mu\text{g}/\text{m}^3$

3.1.6. Sampling and analysis of Ammonia:

- i. Dilute 10ml of concentrated HCl (12M) 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 460Dx
- 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 H₂SO₄). 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 NH₃ in $\mu\text{g}/\text{m}^3$

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% HNO₃ & 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 % HNO₃/ 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 $\mu\text{g/ml}$.

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, m^3/min .

t = time in minutes.

ii. Metal Concentration:

$$C = (M_s - M_b) \times V_s \times F_a / V \times F_t$$

Where,

C = concentration, $\mu\text{g metal}/\text{m}^3$

M_s = metal concentration $\mu\text{g/mL}$

M_b = blank concentration $\mu\text{g/mL}$

V_s = total volume of extraction in mL

F_a = total area of exposed filter in cm^2

V = Volume of air sampled in m^3

F_t = 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 $\text{C}_{20}\text{H}_{12}$ 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 ($1.2\text{ m}^3/\text{min}$) 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 Processing

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 $200\text{-}250\text{ mm} \times 10\text{ mm}$ 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 $\text{ng}/\mu\text{L}$ 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:

$$C \text{ (ng /m}^3\text{)} = C_s * V_e / V_i * V_s$$

Where,

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

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

V_i : Injection Volume (i.e 1 μL)

V_s : Volume of air sample in m^3

3.2 Noise Levels

In general, noise is sound which is composed of many frequency components of various loudness distributed over the audible frequency range. Various noise scales have been introduced to describe, in a single number, the response of an average human to a complex sound made up of various frequencies at different loudness levels. The most common and universally accepted scale is the A weighted scale which is measured as decibel (dB). This is more suitable for audible range of 20 to 20000 HZ and has been designed to weigh various components of noise according to the response of human ear.

The impact of noise can be undertaken by taking in to consideration various factors like potential damage to hearing. Physiological responses, annoyance and general community responses, which have several effects, like Noise Induced Hearing Loss (NIHL). Noise generating sources are identified based on the activities like vehicle movement & associated activities. Accordingly, about 2 locations were identified to assess the noise levels. The identified locations are:

N₁-CETP and N₂-WTP

Noise measurements were carried out using Lutron SL 4001 model. The sound level meter used was in accordance with IS: 9779 and IEC 651 standards for noise survey. Instrument calibration was done in NABL accredited.

Noise measurements were undertaken at all locations, with duration of 10 minutes per hour (as per Order one minute per hour) continuously for 24 hours in a day for two days in a week for four weeks in the month. The day noise levels were monitored during 6 am to 10 pm and night levels during 10 pm to 6 am at all locations.

For noise levels measured over a given period of time interval, it is possible to describe important features of noise using statistical quantiles. This is calculated using the percent of the time certain noise levels are exceeded during the time interval. The notation for the statistical quantities of noise levels are:

L10 is the noise level exceeded 10 percent of the time,

L50 is the noise level exceeded 50 percent of the time and

L90 is the noise level exceeded 90 percent of the time.

Leq is the Equivalent sound pressure level, which is equivalent to the same sound energy as the actual fluctuating sound.

This is necessary because sound from noise source often fluctuates widely during a given period of time. Leq is calculated from the following equation:

$$\text{Leq (hrly)} = L_{50} + [(L_{10} - L_{90})^2 / 60]$$

The noise rating developed for community noise from all sources is the Day-Night sound Level (Ldn). It is similar to a 24 hrs, equivalent sound level except that during night time period a 10 dB(A) weighting penalty is added to the instantaneous sound level before computing the 24 hourly average. This nighttime penalty is added to account for the fact that noise during night when people usually sleep is judged as more annoying than the same noise during the daytime.

The Ldn for a given location in a community is calculated from the hourly Leq values by the following equation: $L_{dn} = 10 \log (1/24 (16[10^{L_d/10}] + [10^{L_n-10/10}]))$

Where L_d is the equivalent sound level during the day time (6 am to 10 pm) and L_n is the equivalent Sound level during the night time (10 pm to 6 am).

Ambient Noise standards have been notified by the Ministry of environment and Forests vide Gazette notification - 2009 based on the 'A' weighted equivalent noise level (Leq). The standards are given in the Annexure.

Noise measurements were made at 1.5 m above the ground level and a suitable distance from the corridor. The basic Unit of measurements was taken in the fast mode and was sampled to yield statistical information's such as Leq (equivalent noise level), L 10 and L9, those exceeded for 10 and 90 percent of the time respectively. The noise level L10 can be considered as long term noise L90 can be considered as the background noise.

Calibration: The monitoring and analytical instruments are being calibrated by ETDC periodically. The correction factors, if any, are being used in computation of the data.

3.3 Water Quality

Any adverse impact or pollution water will have serious effect on the environment. Hence, it becomes important to monitor the water quality periodically in the port project area. The samples were analysed as per IS: 3025 and compared to the specifications of IS: 10500 norms. The locations identified for collection of samples were

- W₁-Oddidakal (GW)
- W₂-Shantigudde (GW)
- W₃-Chandras Nagar (GW)
- W₄- Permude (GW)
- W₅- CETP (GW)
- W₆- Non Processing Area (GW)
- W₇- Permude-Bajpe Village Boundary (GW)
- W₈- Kalavar (GW)
- W₉- 10mL water Reservoir (GW)
- W₁₀- Permude Surface Water

4.0 Results

4.1 Ambient Air Quality

AMBIENT AIR QUALITY (AAQ) MONITORING TEST REPORT: AUGUST, 2019

Customer	M/s. Mangalore SEZ Limited
Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	CETP
Sampling Date	19.08.2019
Report Date	03.09.2019
Report No	HECS/AA/001/030919

CONSOLIDATED TEST RESULTS: AUGUST 2019

Parameter Monitored	NAAQ Standard, 2009	Results
PM _{2.5} (µg/m ³)	60 [*]	22
PM ₁₀ (µg/m ³)	100 [*]	45
SO ₂ (µg/m ³)	80 [*]	17
NO ₂ (µg/m ³)	80 [*]	25
CO (mg/m ³)	2 ^{**}	BDL
O ₃ (µg/m ³)	100 ^{**}	BDL
NH ₃ (µg/m ³)	400 [*]	BDL
Pb (µg/m ³)	1 [*]	BDL
As (ng/m ³)	6 ^{***}	BDL
Ni (ng/m ³)	20 ^{***}	BDL
Benzene (µg/m ³)	5 ^{***}	BDL
B(a)P (ng/m ³)	1 ^{***}	BDL

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

Test Methods Followed:

PM₁₀ : 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)
 SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
 NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
 O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
 NH₃ : 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)
 C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
 B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

BDL =Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide(DL 0.1 mg/m³); O₃-Ozone(DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³); B(a)P- Benzo-α-pyrene(DL 0.1 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.



(Dr K GANESAN)
Authorized Signatory

AMBIENT AIR QUALITY (AAQ) MONITORING TEST REPORT: AUGUST 2019

Customer	M/s. Mangalore SEZ Limited
Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	WTP
Sampling Date	20.08.2019
Report Date	03.09.2019
Report No	HECS/AA/002/030919

CONSOLIDATED TEST RESULTS: AUGUST 2019

Parameter Monitored	NAAQ Standard, 2009	Results
PM _{2.5} (µg/m ³)	60 [*]	20
PM ₁₀ (µg/m ³)	100 [*]	41
SO ₂ (µg/m ³)	80 [*]	14
NO ₂ (µg/m ³)	80 [*]	19
CO (mg/m ³)	2 ^{**}	BDL
O ₃ (µg/m ³)	100 ^{***}	BDL
NH ₃ (µg/m ³)	400 [*]	BDL
Pb (µg/m ³)	1 [*]	BDL
As (ng/m ³)	6 ^{***}	BDL
Ni (ng/m ³)	20 ^{***}	BDL
Benzene (µg/m ³)	5 ^{***}	BDL
B(a)P (ng/m ³)	1 ^{***}	BDL

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

Test Methods Followed:

PM₁₀ : 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)
 SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
 NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
 O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
 NH₃ : 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)
 C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
 B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

BDL =Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide(DL 0.1 mg/m³);O₃-Ozone(DL 10 µg/m³);NH₃- Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³);As-Arsenic (DL 0.1 ng/m³);Ni-Nickel (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³);B(a)P- Benzo -α-pyrene(DL0.1 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.




 (Dr K GANESAN)
 Authorized Signatory

4.2 Noise level:

TEST REPORT: NOISE MONITORING: AUGUST 2019

Customer	M/s. Mangalore SEZ Limited
Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Noise Monitoring
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	CETP & WTP areas
Sampling Date	07-08.08.2019 & 08-09.08.2019
Report Date	03.09.2019
Report No.	HECS/N/001-002/030919

Time (Hrs)	CETP AREA (07-08.08.2019)	WTP AREA (08-09.08.2019)
06.00	56.7	50.9
07.00	56.3	50.1
08.00	56.5	56.5
09.00	56.1	55.8
10.00	57.3	48.2
11.00	57.5	47.9
12.00	59.1	47.4
13.00	58.8	47.9
14.00	58.5	47.0
15.00	59.2	48.1
16.00	57.7	47.6
17.00	57.1	47.4
18.00	58.0	47.1
19.00	58.3	48.3
20.00	58.2	47.0
21.00	57.5	47.5
22.00	57.3	47.6
23.00	59.5	47.2
00.00	56.9	49.5
01.00	55.8	48.6
02.00	58.1	47.4
03.00	56.3	48.5
04.00	57.6	47.7
05.00	56.1	48.3
MIN	55.8	47
MAX	59.5	56.5
Day dB(A)	54.02	57.18
Night dB(A)	49.33	53.36

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: Monitoring Date represents 24 hours from 6:00 am to 6:00am next day. Legend: Leq- Equivalent Noise Level (hourly); Ld-Day Time Equivalent Noise Level (06:00-22:00 hrs); Ln-Night Time Equivalent Noise Level (22:00-06:00 hrs); and Ldn-24 hourly Equivalent Noise Level. Reference: The Noise Pollution (Regulation and Control) Rules, 2000, CPCB, New Delhi

CONCLUSION: All the parameters meet MoEF Standards



(Signature)
(Dr K GANESAN)
Authorized Signatory

TEST REPORT: NOISE MONITORING: AUGUST 2019

Customer	M/s. Mangalore SEZ Limited
Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Noise Monitoring
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	CETP & WTP areas
Sampling Date	19-20.08.2019 & 20-21.08.2019
Report Date	03.09.2019
Report No.	HECS/N/001-002/030918

Time (Hrs)	CETP AREA (19-20.08.2019)	WTP AREA (20-21.08.2019)
06.00	49.8	52.4
07.00	48.6	51.2
08.00	49	52.5
09.00	49.8	53.1
10.00	51.5	54.5
11.00	52.7	56.4
12.00	53.5	56.2
13.00	54.6	57.7
14.00	54.7	58.3
15.00	55.2	58.9
16.00	56.1	58.1
17.00	57	59.2
18.00	57.3	58.8
19.00	56.7	57.4
20.00	55.4	57.2
21.00	56.2	58.1
22.00	53.6	58.2
23.00	53.4	56.7
00.00	53.6	55.3
01.00	52.9	55.5
02.00	51.7	53.1
03.00	50.4	53.4
04.00	49.5	50.9
05.00	48.5	52.6
MIN	48.50	50.90
MAX	57.30	59.20
Day dB(A)	53.63	56.36
Night dB(A)	51.43	53.93

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: Monitoring Date represents 24 hours from 6:00 am to 6:00am next day. Legend: Leq- Equivalent Noise Level (hourly); Ld-Day Time Equivalent Noise Level (06:00-22:00 hrs); Ln-Night Time Equivalent Noise Level (22:00-06:00 hrs); and Ldn-24 hourly Equivalent Noise Level. Reference: The Noise Pollution (Regulation and Control) Rules, 2000, CPCB, New Delhi

CONCLUSION: All the parameters meet MoEF Standards



(Dr K GANESAN)
Authorized Signatory

4.3 Water Analysis Results

TEST REPORT

Customer	M/s. Mangalore SEZ Limited
Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore - 575006
Sample Description	Oddidakal (GW)
Date of Sampling	07.08.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	03.09.2019
Report No	HECS/W/001/030919

Sl.No.	Parameters monitored	Units	Results	As per IS 10500:2012 standard limit	
				Acceptable (max)	Permissible (max)
1.	Colour	Hazen	Colourless	5	15
2.	pH (at 25 °C)	-	6.93	6.5-8.5	No Relaxation
3.	Electrical Conductivity	µS/cm	220	NP	NP
4.	Odour	-	Agreeable	Agreeable	
5.	Taste	-	Agreeable	Agreeable	
6.	Turbidity	NTU	0.2	1	5
7.	Total Dissolved Solids	mg/L	163	500	2000
8.	Alkalinity as CaCO ₃	mg/L	76.9	200	600
9.	Total Hardness	mg/L	81.6	200	600
10.	Calcium as Ca	mg/L	16.4	75	200
11.	Magnesium as Mg	mg/L	9.9	30	100
12.	Iron as Fe	mg/L	0.04	0.3	No Relaxation
13.	Sulphate as SO ₄	mg/L	6.6	200	400
14.	Chloride as Cl	mg/L	8.1	250	1000
15.	Boron as B	mg/L	BDL (DL 0.1)	0.5	1.0
16.	Residual free chlorine	mg/L	BDL (DL 0.1)	0.2	1
17.	Fluoride	mg/L	0.14	1.0	1.5
18.	Phenolic Compounds	mg/L	BDL (DL 0.001)	0.001	0.002
19.	Manganese as Mn	mg/L	BDL (DL 0.01)	0.1	0.3
20.	Zinc as Zn	mg/L	BDL (DL 0.01)	5	15
21.	Arsenic as As	mg/L	BDL (DL 0.005)	0.01	0.05
22.	Cyanide as CN	mg/L	BDL (DL 0.01)	0.05	No Relaxation
23.	Cadmium as Cd	mg/L	BDL (DL 0.01)	0.003	No Relaxation
24.	Chromium as Cr	mg/L	BDL (DL 0.01)	0.05	No Relaxation
25.	Aluminium	mg/L	BDL (DL 0.02)	0.03	0.2
26.	Selenium as Se	mg/L	BDL (DL 0.005)	0.01	No Relaxation
27.	Lead as Pb	mg/L	BDL (DL 0.01)	0.01	No Relaxation
28.	Mercury as Hg	mg/L	BDL (DL 0.001)	0.001	No Relaxation
29.	Nitrate Nitrogen NO ₃	mg/L	1.2	45	No Relaxation
30.	E.Coli	Per/100mL	Nil	Shall not be detectable in any 100 mL sample	

Note:- BDL - Below Detection Limit; D.L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; mL-Milliliter; NP-Not Provided; NP-Not Provided

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

End of Report



Authorized Signatory
(Dr K GANESAN)

TEST REPORT

Customer		M/s. Mangalore SEZ Limited			
Address		3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006			
Sample Description		Shantigudde (GW)			
Date of Sampling		07.08.2019			
Sample Collected by		Hubert Enviro Care Systems (P) Ltd			
Report Date		03.09.2019			
Report No		HECS/W/002/030919			
Sl.No.	Parameters monitored	Units	Results	As per IS 10500:2012 standard limit	
				Acceptable (max)	Permissible (max)
1.	Colour	Hazen	Colourless	5	15
2.	pH (at 25 °C)	-	6.54	6.5-8.5	No Relaxation
3.	Electrical Conductivity	µS/cm	141	NP	NP
4.	Odour	-	Agreeable	Agreeable	
5.	Taste	-	Agreeable	Agreeable	
6.	Turbidity.	NTU	1.6	1	5
7.	Total Dissolved Solids	mg/L	106	500	2000
8.	Alkalinity as CaCO ₃	mg/L	38.4	200	600
9.	Total Hardness	mg/L	46.3	200	600
10.	Calcium as Ca	mg/L	12.6	75	200
11.	Magnesium as Mg	mg/L	3.6	30	100
12.	Iron as Fe	mg/L	0.24	0.3	No Relaxation
13.	Sulphate as SO ₄	mg/L	BDL (DL 5)	200	400
14.	Chloride as Cl	mg/L	19.2	250	1000
15.	Boron as B	mg/L	BDL (DL 0.1)	0.5	1.0
16.	Residual free chlorine	mg/L	BDL (DL 0.1)	0.2	1
17.	Fluoride	mg/L	0.19	1.0	1.5
18.	Phenolic Compounds	mg/L	BDL (DL 0.001)	0.001	0.002
19.	Manganese as Mn	mg/L	BDL (DL 0.01)	0.1	0.3
20.	Zinc as Zn	mg/L	BDL (DL 0.01)	5	15
21.	Arsenic as As	mg/L	BDL (DL 0.005)	0.01	0.05
22.	Cyanide as CN	mg/L	BDL (DL 0.01)	0.05	No Relaxation
23.	Cadmium as Cd	mg/L	BDL (DL 0.01)	0.003	No Relaxation
24.	Chromium as Cr	mg/L	BDL (DL 0.01)	0.05	No Relaxation
25.	Aluminium	mg/L	BDL (DL 0.02)	0.03	0.2
26.	Selenium as Se	mg/L	BDL (DL 0.005)	0.01	No Relaxation
27.	Lead as Pb	mg/L	BDL (DL 0.01)	0.01	No Relaxation
28.	Mercury as Hg	mg/L	BDL (DL 0.001)	0.001	No Relaxation
29.	Nitrate Nitrogen NO ₃	mg/L	1.55	45	No Relaxation
30.	E.Coli	Per/100mL	Nil	Shall not be detectable in any 100 mL sample	

Note:-BDL - Below Detection Limit; D.L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; mL-Milliliter; NP-Not Provided

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

End of Report



Authorized Signatory
(Dr K GANESAN)

TEST REPORT

Customer	M/s. Mangalore SEZ Limited				
Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006				
Sample Description	Chandrabas Nagar (GW)				
Date of Sampling	07.08.2019				
Sample Collected by	Hubert Enviro Care Systems (P) Ltd				
Report Date	03.09.2019				
Report No	HECS/W/003/030919				
Sl. No.	Parameters monitored	Units	Results	As per IS 10500:2012 standard limit	
				Acceptable (max)	Permissible (max)
1.	Colour	Hazen	Colourless	5	15
2.	pH (at 25 °C)	-	6.61	6.5-8.5	No Relaxation
3.	Electrical Conductivity	µS/cm	119	NP	NP
4.	Odour	-	Agreeable	Agreeable	
5.	Taste	-	Agreeable	Agreeable	
6.	Turbidity	NTU	BDL (DL 0.1)	1	5
7.	Total Dissolved Solids	mg/L	89	500	2000
8.	Alkalinity as CaCO ₃	mg/L	10.7	200	600
9.	Total Hardness	mg/L	22.2	200	600
10.	Calcium as Ca	mg/L	5.6	75	200
11.	Magnesium as Mg	mg/L	BDL (DL 2)	30	100
12.	Iron as Fe	mg/L	0.08	0.3	No Relaxation
13.	Sulphate as SO ₄	mg/L	BDL (DL 5)	200	400
14.	Chloride as Cl	mg/L	19.2	250	1000
15.	Boron as B	mg/L	BDL (DL 0.1)	0.5	1.0
16.	Residual free chlorine	mg/L	BDL (DL 0.1)	0.2	1
17.	Fluoride	mg/L	0.15	1.0	1.5
18.	Phenolic Compounds	mg/L	BDL (DL 0.001)	0.001	0.002
19.	Manganese as Mn	mg/L	BDL (DL 0.01)	0.1	0.3
20.	Zinc as Zn	mg/L	BDL (DL 0.01)	5	15
21.	Arsenic as As	mg/L	BDL (DL 0.005)	0.01	0.05
22.	Cyanide as CN	mg/L	BDL (DL 0.01)	0.05	No Relaxation
23.	Cadmium as Cd	mg/L	BDL (DL 0.01)	0.003	No Relaxation
24.	Chromium as Cr	mg/L	BDL (DL 0.01)	0.05	No Relaxation
25.	Aluminium	mg/L	BDL (DL 0.02)	0.03	0.2
26.	Selenium as Se	mg/L	BDL (DL 0.005)	0.01	No Relaxation
27.	Lead as Pb	mg/L	BDL (DL 0.01)	0.01	No Relaxation
28.	Mercury as Hg	mg/L	BDL (DL 0.001)	0.001	No Relaxation
29.	Nitrate Nitrogen NO ₃	mg/L	1.6	45	No Relaxation
30.	E.Coli	Per/100mL	Nil	Shall not be detectable in any 100 mL sample	

Note:- BDL - Below Detection Limit; D.L. - Detection Limit; NTU - Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; mL - Milliliter; NP - Not Provided

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

End of Report



[Signature]
Authorized Signatory
(Dr K GANESAN)

TEST REPORT

Customer		M/s. Mangalore SEZ Limited			
Address		3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006			
Sample Description		Permude (GW)			
Date of Sampling		07.08.2019			
Sample Collected by		Hubert Enviro Care Systems (P) Ltd			
Report Date		03.09.2019			
Report No		HECS/W/004/030919			
Sl.No.	Parameters monitored	Units	Results	As per IS 10500:2012 standard limit	
				Acceptable (max)	Permissible (max)
1.	Colour	Hazen	Colourless	5	15
2.	pH (at 25 °C)	-	7.77	6.5-8.5	No Relaxation
3.	Electrical Conductivity	µS/cm	140	NP	NP
4.	Odour	-	Agreeable	Agreeable	
5.	Taste	-	Agreeable	Agreeable	
6.	Turbidity	NTU	BDL (DL 0.1)	1	5
7.	Total Dissolved Solids	mg/L	105	500	2000
8.	Alkalinity as CaCO ₃	mg/L	40.6	200	600
9.	Total Hardness	mg/L	69.4	200	600
10.	Calcium as Ca	mg/L	16.4	75	200
11.	Magnesium as Mg	mg/L	7.0	30	100
12.	Iron as Fe	mg/L	0.14	0.3	No Relaxation
13.	Sulphate as SO ₄	mg/L	6.6	200	400
14.	Chloride as Cl	mg/L	14.1	250	1000
15.	Boron as B	mg/L	BDL (DL 0.1)	0.5	1.0
16.	Residual free chlorine	mg/L	BDL (DL 0.1)	0.2	1
17.	Fluoride	mg/L	0.11	1.0	1.5
18.	Phenolic Compounds	mg/L	BDL (DL 0.001)	0.001	0.002
19.	Manganese as Mn	mg/L	BDL (DL 0.01)	0.1	0.3
20.	Zinc as Zn	mg/L	BDL (DL 0.01)	5	15
21.	Arsenic as As	mg/L	BDL (DL 0.005)	0.01	0.05
22.	Cyanide as CN	mg/L	BDL (DL 0.01)	0.05	No Relaxation
23.	Cadmium as Cd	mg/L	BDL (DL 0.01)	0.003	No Relaxation
24.	Chromium as Cr	mg/L	BDL (DL 0.01)	0.05	No Relaxation
25.	Aluminium	mg/L	BDL (DL 0.02)	0.03	0.2
26.	Selenium as Se	mg/L	BDL (DL 0.005)	0.01	No Relaxation
27.	Lead as Pb	mg/L	BDL (DL 0.01)	0.01	No Relaxation
28.	Mercury as Hg	mg/L	BDL (DL 0.001)	0.001	No Relaxation
29.	Nitrate Nitrogen NO ₃	mg/L	1.2	45	No Relaxation
30.	E.Coli	Per/100mL	Nil	Shall not be detectable in any 100 mL sample	

Note:-BDL - Below Detection Limit; D.L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L- Milligrams per Liter; mL-Milliliter; NP-Not Provided

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

End of Report



[Signature]
Authorized Signatory
(Dr K GANESAN)

TEST REPORT

Customer	M/s. Mangalore SEZ Limited				
Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006				
Sample Description	CETP (GW)				
Date of Sampling	07.08.2019				
Sample Collected by	Hubert Enviro Care Systems (P) Ltd				
Report Date	03.09.2019				
Report No	HECS/W/005/030919				
Sl.No.	Parameters monitored	Units	Results	As per IS 10500:2012 standard limit	
				Acceptable (max)	Permissible (max)
1.	Colour	Hazen	Colourless	5	15
2.	pH (at 25 °C)	-	8.36	6.5-8.5	No Relaxation
3.	Electrical Conductivity	µS/cm	105	NP	NP
4.	Odour	-	Agreeable	Agreeable	
5.	Taste	-	Agreeable	Agreeable	
6.	Turbidity	NTU	0.2	1	5
7.	Total Dissolved Solids	mg/L	79	500	2000
8.	Alkalinity as CaCO ₃	mg/L	25.6	200	600
9.	Total Hardness	mg/L	44.9	200	600
10.	Calcium as Ca	mg/L	14.7	75	200
11.	Magnesium as Mg	mg/L	BDL (DL 2)	30	100
12.	Iron as Fe	mg/L	0.03	0.3	No Relaxation
13.	Sulphate as SO ₄	mg/L	5.3	200	400
14.	Chloride as Cl	mg/L	10.1	250	1000
15.	Boron as B	mg/L	BDL (DL 0.1)	0.5	1.0
16.	Residual free chlorine	mg/L	BDL (DL 0.1)	0.2	1
17.	Fluoride	mg/L	0.16	1.0	1.5
18.	Phenolic Compounds	mg/L	BDL (DL 0.001)	0.001	0.002
19.	Manganese as Mn	mg/L	BDL (DL 0.01)	0.1	0.3
20.	Zinc as Zn	mg/L	BDL (DL 0.01)	5	15
21.	Arsenic as As	mg/L	BDL (DL 0.005)	0.01	0.05
22.	Cyanide as CN	mg/L	BDL (DL 0.01)	0.05	No Relaxation
23.	Cadmium as Cd	mg/L	BDL (DL 0.01)	0.003	No Relaxation
24.	Chromium as Cr	mg/L	BDL (DL 0.01)	0.05	No Relaxation
25.	Aluminium	mg/L	BDL (DL 0.02)	0.03	0.2
26.	Selenium as Se	mg/L	BDL (DL 0.005)	0.01	No Relaxation
27.	Lead as Pb	mg/L	BDL (DL 0.01)	0.01	No Relaxation
28.	Mercury as Hg	mg/L	BDL (DL 0.001)	0.001	No Relaxation
29.	Nitrate Nitrogen NO ₃	mg/L	0.32	45	No Relaxation
30.	E.Coli	Per/100mL	Nil	Shall not be detectable in any 100 mL sample	

Note:- BDL - Below Detection Limit; D.L.- Detection Limit; NTU- Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; mL-Milliliter; NP-Not Provided

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

End of Report



Authorized Signatory
(Dr K GANESAN)

TEST REPORT

Customer	M/s. Mangalore SEZ Limited				
Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006				
Sample Description	Non Processing Area (GW)				
Date of Sampling	07.08.2019				
Sample Collected by	Hubert Enviro Care Systems (P) Ltd				
Report Date	03.09.2019				
Report No	HECS/W/006/030919				
Sl.No.	Parameters monitored	Units	Results	As per IS 10500:2012 standard limit	
				Acceptable (max)	Permissible (max)
1.	Colour	Hazen	Colourless	5	15
2.	pH (at 25 °C)	-	7.14	6.5-8.5	No Relaxation
3.	Electrical Conductivity	µS/cm	145	NP	NP
4.	Odour	-	Agreeable	Agreeable	
5.	Taste	-	Agreeable	Agreeable	
6.	Turbidity	NTU	2.4	1	5
7.	Total Dissolved Solids	mg/L	109	500	2000
8.	Alkalinity as CaCO ₃	mg/L	51.2	200	600
9.	Total Hardness	mg/L	57.4	200	600
10.	Calcium as Ca	mg/L	20	75	200
11.	Magnesium as Mg	mg/L	BDL (DL 2)	30	100
12.	Iron as Fe	mg/L	0.15	0.3	No Relaxation
13.	Sulphate as SO ₄	mg/L	25.92	200	400
14.	Chloride as Cl	mg/L	12.1	250	1000
15.	Boron as B	mg/L	BDL (DL 0.1)	0.5	1.0
16.	Residual free chlorine	mg/L	BDL (DL 0.1)	0.2	1
17.	Fluoride	mg/L	0.15	1.0	1.5
18.	Phenolic Compounds	mg/L	BDL (DL 0.001)	0.001	0.002
19.	Manganese as Mn	mg/L	BDL (DL 0.01)	0.1	0.3
20.	Zinc as Zn	mg/L	BDL (DL 0.01)	5	15
21.	Arsenic as As	mg/L	BDL (DL 0.005)	0.01	0.05
22.	Cyanide as CN	mg/L	BDL (DL 0.01)	0.05	No Relaxation
23.	Cadmium as Cd	mg/L	BDL (DL 0.01)	0.003	No Relaxation
24.	Chromium as Cr	mg/L	BDL (DL 0.01)	0.05	No Relaxation
25.	Aluminium	mg/L	BDL (DL 0.02)	0.03	0.2
26.	Selenium as Se	mg/L	BDL (DL 0.005)	0.01	No Relaxation
27.	Lead as Pb	mg/L	BDL (DL 0.01)	0.01	No Relaxation
28.	Mercury as Hg	mg/L	BDL (DL 0.001)	0.001	No Relaxation
29.	Nitrate Nitrogen NO ₃	mg/L	1.2	45	No Relaxation
30.	E.Coli	Per/100mL	Nil	Shall not be detectable in any 100 mL sample	

Note:-BDL - Below Detection Limit; D.L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; mL-Milliliter; NP-Not Provided

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

End of Report



Authorized Signatory
(Dr K GANESAN)

TEST REPORT

Customer		M/s. Mangalore SEZ Limited			
Address		3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006			
Sample Description		Permude Bajpe Village Boundary (GW)			
Date of Sampling		07.08.2019			
Sample Collected by		Hubert Enviro Care Systems (P) Ltd			
Report Date		03.09.2019			
Report No		HECS/W/007/030919			
Sl.No.	Parameters monitored	Units	Results	As per IS 10500:2012 standard limit	
				Acceptable (max)	Permissible (max)
1.	Colour	Hazen	Colourless	5	15
2.	pH (at 25 °C)	-	6.85	6.5-8.5	No Relaxation
3.	Electrical Conductivity	µS/cm	147	NP	NP
4.	Odour	-	Agreeable	Agreeable	
5.	Taste	-	Agreeable	Agreeable	
6.	Turbidity	NTU	1.8	1	5
7.	Total Dissolved Solids	mg/L	110	500	2000
8.	Alkalinity as CaCO ₃	mg/L	38.4	200	500
9.	Total Hardness	mg/L	44.4	200	600
10.	Calcium as Ca	mg/L	14.8	75	200
11.	Magnesium as Mg	mg/L	BDL (DL 2)	30	100
12.	Iron as Fe	mg/L	0.08	0.3	No Relaxation
13.	Sulphate as SO ₄	mg/L	9.46	200	400
14.	Chloride as Cl	mg/L	17.2	250	1000
15.	Boron as B	mg/L	BDL (DL 0.1)	0.5	1.0
16.	Residual free chlorine	mg/L	BDL (DL 0.1)	0.2	1
17.	Fluoride	mg/L	0.11	1.0	1.5
18.	Phenolic Compounds	mg/L	BDL (DL 0.001)	0.001	0.002
19.	Manganese as Mn	mg/L	BDL (DL 0.01)	0.1	0.3
20.	Zinc as Zn	mg/L	BDL (DL 0.01)	5	15
21.	Arsenic as As	mg/L	BDL (DL 0.005)	0.01	0.05
22.	Cyanide as CN	mg/L	BDL (DL 0.01)	0.05	No Relaxation
23.	Cadmium as Cd	mg/L	BDL (DL 0.01)	0.003	No Relaxation
24.	Chromium as Cr	mg/L	BDL (DL 0.01)	0.05	No Relaxation
25.	Aluminium	mg/L	BDL (DL 0.02)	0.03	0.2
26.	Selenium as Se	mg/L	BDL (DL 0.005)	0.01	No Relaxation
27.	Lead as Pb	mg/L	BDL (DL 0.01)	0.01	No Relaxation
28.	Mercury as Hg	mg/L	BDL (DL 0.001)	0.001	No Relaxation
29.	Nitrate Nitrogen NO ₃	mg/L	1.3	45	No Relaxation
30.	E.Coli	Per /100mL	Nil	Shall not be detectable in any 100 mL sample	

Note:-BDL - Below Detection Limit; D.L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; mL-Milliliter; NP-Not Provided

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

End of Report



[Signature]
Authorized Signatory
(Dr K Ganesan)

TEST REPORT

Customer	M/s. Mangalore SEZ Limited				
Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006				
Sample Description	Kalavar (GW)				
Date of Sampling	07.08.2019				
Sample Collected by	Hubert Enviro Care Systems (P) Ltd				
Report Date	03.09.2019				
Report No	HECS/W/008/030919				
Sl.No.	Parameters monitored	Units	Results	As per IS 10500:2012 standard limit	
				Acceptable (max)	Permissible (max)
1.	Colour	Hazen	Colourless	5	15
2.	pH (at 25 °C)	-	6.58	6.5-8.5	No Relaxation
3.	Electrical Conductivity	µS/cm	182	NP	NP
4.	Odour	-	Agreeable	Agreeable	
5.	Taste	-	Agreeable	Agreeable	
6.	Turbidity	NTU	BDL (DL 0.1)	1	5
7.	Total Dissolved Solids	mg/L	136	500	2000
8.	Alkalinity as CaCO ₃	mg/L	4.3	200	600
9.	Total Hardness	mg/L	47	200	600
10.	Calcium as Ca	mg/L	9.0	75	200
11.	Magnesium as Mg	mg/L	6.0	30	100
12.	Iron as Fe	mg/L	0.3	0.3	No Relaxation
13.	Sulphate as SO ₄	mg/L	BDL (DL 4)	200	400
14.	Chloride as Cl	mg/L	30.3	250	1000
15.	Boron as B	mg/L	BDL (DL 0.1)	0.5	1.0
16.	Residual free chlorine	mg/L	BDL (DL 0.1)	0.2	1
17.	Fluoride	mg/L	0.12	1.0	1.5
18.	Phenolic Compounds	mg/L	BDL (DL 0.001)	0.001	0.002
19.	Manganese as Mn	mg/L	BDL (DL 0.01)	0.1	0.3
20.	Zinc as Zn	mg/L	BDL (DL 0.01)	5	15
21.	Arsenic as As	mg/L	BDL (DL 0.005)	0.01	0.05
22.	Cyanide as CN	mg/L	BDL (DL 0.01)	0.05	No Relaxation
23.	Cadmium as Cd	mg/L	BDL (DL 0.01)	0.003	No Relaxation
24.	Chromium as Cr	mg/L	BDL (DL 0.01)	0.05	No Relaxation
25.	Aluminium	mg/L	BDL (DL 0.02)	0.03	0.2
26.	Selenium as Se	mg/L	BDL (DL 0.005)	0.01	No Relaxation
27.	Lead as Pb	mg/L	BDL (DL 0.01)	0.01	No Relaxation
28.	Mercury as Hg	mg/L	BDL (DL 0.001)	0.001	No Relaxation
29.	Nitrate Nitrogen NO ₃	mg/L	1.1	45	No Relaxation
30.	E.Coli	Per/100mL	Nil	Shall not be detectable in any 100 mL sample	

Note:-BDL - Below Detection Limit; D.L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; mL-Milliliter; NP-Not Provided

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

End of Report



[Signature]
Authorized Signatory
(Dr K Ganesan)

TEST REPORT

Customer	M/s. Mangalore SEZ Limited				
Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006				
Sample Description	10 ml water Reservoir (GW)				
Date of Sampling	07.08.2019				
Sample Collected by	Hubert Enviro Care Systems (P) Ltd				
Report Date	03.09.2019				
Report No	HECS/M/009/030919				
Sl.No.	Parameters monitored	Units	Results	As per IS 10500:2012 standard limit	
				Acceptable (max)	Permissible (max)
1.	Colour	Hazen	Brown	5	15
2.	pH (at 25 °C)	-	6.60	6.5-8.5	No Relaxation
3.	Electrical Conductivity	µS/cm	260	NP	NP
4.	Odour	-	Agreeable	Agreeable	
5.	Taste	-	Agreeable	Agreeable	
6.	Turbidity	NTU	3.2	1	5
7.	Total Dissolved Solids	mg/L	190	500	2000
8.	Alkalinity as CaCO ₃	mg/L	98.2	200	600
9.	Total Hardness	mg/L	102	200	600
10.	Calcium as Ca	mg/L	32.7	75	200
11.	Magnesium as Mg	mg/L	4.95	30	100
12.	Iron as Fe	mg/L	0.21	0.3	No Relaxation
13.	Sulphate as SO ₄	mg/L	7.4	200	400
14.	Chloride as Cl	mg/L	18.2	250	1000
15.	Boron as B	mg/L	BDL(DL 0.1)	0.5	1.0
16.	Residual free chlorine	mg/L	BDL(DL 0.1)	0.2	1
17.	Fluoride	mg/L	0.2	1.0	1.5
18.	Phenolic Compounds	mg/L	BDL(DL 0.001)	0.001	0.002
19.	Manganese as Mn	mg/L	BDL(DL 0.01)	0.1	0.3
20.	Zinc as Zn	mg/L	BDL(DL 0.01)	5	15
21.	Arsenic as As	mg/L	BDL(DL 0.005)	0.01	0.05
22.	Cyanide as CN	mg/L	BDL(DL 0.01)	0.05	No Relaxation
23.	Cadmium as Cd	mg/L	BDL(DL 0.01)	0.003	No Relaxation
24.	Chromium as Cr	mg/L	BDL(DL 0.01)	0.05	No Relaxation
25.	Aluminium	mg/L	BDL(DL 0.02)	0.03	0.2
26.	Selenium as Se	mg/L	BDL(DL 0.005)	0.01	No Relaxation
27.	Lead as Pb	mg/L	BDL(DL 0.01)	0.01	No Relaxation
28.	Mercury as Hg	mg/L	BDL(DL 0.001)	0.001	No Relaxation
29.	Nitrate Nitrogen NO ₃	mg/L	1.1	45	No Relaxation
30.	E.Coli	Per /100mL	Nil	Shall not be detectable in any 100 mL sample	

Note:-BDL - Below Detection Limit; D,L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; mL-Milliliter; NP-Not Provided

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

End of Report



Authorized Signatory
(Dr K Ganesan)

TEST REPORT

Customer	M/s. Mangalore SEZ Limited				
Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006				
Sample Description	Perimure Surface Water				
Date of Sampling	07.08.2019				
Sample Collected by	Hubert Enviro Care Systems (P) Ltd				
Report Date	08.09.2019				
Report No	HECS/W/010/030919				
Sl.No.	Parameters monitored	Units	Results	As per IS 10500:2012 standard limit	
				Acceptable (max)	Permissible (max)
1.	Colour	Hazen	Colourless	5	15
2.	pH (at 25 °C)	-	6.54	6.5-8.5	No Relaxation
3.	Electrical Conductivity	µS/cm	87	NP	NP
4.	Odour	-	Agreeable	Agreeable	
5.	Taste	-	Agreeable	Agreeable	
6.	Turbidity	NTU	1.8	1	5
7.	Total Dissolved Solids	mg/l	65	500	2000
8.	Alkalinity as CaCO ₃	mg/l	12.5	200	600
9.	Total Hardness	mg/l	20.4	200	600
10.	Calcium as Ca	mg/l	6.7	75	200
11.	Magnesium as Mg	mg/l	BDL (DL 2)	30	100
12.	Iron as Fe	mg/l	0.18	0.3	No Relaxation
13.	Sulphate as SO ₄	mg/l	38.3	200	400
14.	Chloride as Cl	mg/l	14.1	250	1000
15.	Boron as B	mg/l	BDL(DL 0.1)	0.5	1.0
16.	Residual free chlorine	mg/l	BDL (DL 0.1)	0.2	1
17.	Fluoride	mg/l	0.18	1.0	1.5
18.	Phenolic Compounds	mg/l	BDL(DL 0.001)	0.001	0.002
19.	Manganese as Mn	mg/l	BDL(DL 0.01)	0.1	0.3
20.	Zinc as Zn	mg/l	BDL(DL 0.01)	5	15
21.	Arsenic as As	mg/l	BDL(DL 0.005)	0.01	0.05
22.	Cyanide as CN	mg/l	BDL (DL 0.01)	0.05	No Relaxation
23.	Cadmium as Cd	mg/l	BDL(DL 0.01)	0.003	No Relaxation
24.	Chromium as Cr	mg/l	BDL(DL 0.01)	0.05	No Relaxation
25.	Aluminium	mg/l	BDL(DL 0.02)	0.03	0.2
26.	Selenium as Se	mg/l	BDL(DL 0.005)	0.01	No Relaxation
27.	Lead as Pb	mg/l	BDL(DL 0.01)	0.01	No Relaxation
28.	Mercury as Hg	mg/l	BDL(DL 0.001)	0.001	No Relaxation
29.	Nitrate Nitrogen NO ₃	mg/L	1	45	No Relaxation
30.	E.Coli	Per/100mL	Nil	Shall not be detectable in any 100 mL sample	

Note: BDL - Below Detection Limit; D.L- Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligrams per Liter; mL-Milliliter; NP-Not Provided

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

End of Report



Authorized Signatory
(Dr K Ganesan)

5. 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	PM _{2.5} , PM ₁₀ , SO ₂ , NO ₂ , CO, O ₃ , NH ₃ , Pb, As, Ni, Benzene, B(a)P	Two Locations/Month, 24 hrs/day
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, Carbon monoxide, 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, Seasons (Summer, Winter, Post monsoon), By using grab sampling technique
3	Ambient Noise Level	Noise Level(db) in Day and Night	Two Locations, Seasons (Summer, Winter, Post monsoon), Fortnightly Interval

INDEX

Sr.No	DESCRIPTION	Page No
1	Introduction - M SEZ	1
2	Environmental Monitoring	1
3	Scope and Methodology	1-10
3.1	Ambient Air Quality	1-8
4	Results	9
4.1	Ambient Air Quality	9-10
5	MSEZ Environmental Monitoring Schedule	11
6	Annexure	12 (I-x)

AMBIENT AIR QUALITY MONITORING REPORT - SEPTEMBER 2019

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 MoEFCC/CPCB and KSPCB statutory norms. In this regard, MSEZL has awarded the work to M/s Hubert EnviroCare Systems Pvt Ltd. and to monitor air quality, water quality & noise level for the three years. As per work order, during September 2019, we have conducted ambient air quality at 2 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 per month. The identified monitoring stations are: A₁-CETP & A₂-WTP 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 PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂-Nitrogen-di-oxide; CO-Carbon Mono Oxide (DL 0.1 mg/m³); O₃-Ozone (DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni- Nickel (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³); B(a)P- Benzo-α-pyrene(DL 0.1 ng/m³) as per CPCB stipulation.

3.1.1. Sampling and analysis of PM_{2.5} 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 eight or 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 PM_{2.5} in $\mu\text{g}/\text{m}^3$ (w_f , mg)

Calculations:

- i. Average flow rate (initial and final flow rates) in L/ min

$$= (\text{Initial flow rate} + \text{final flow rate}) / 2$$
- ii. Total vol. of air sampled (TVA) in m^3

$$= \text{Avg. flow rate (L/min)} * 10^{-3} (\text{m}^3/\text{L}) * \text{sampling time (hr)} * 60 (\text{min/hr})$$
- iii. Concentration of PM in $\mu\text{g}/\text{m}^3$

$$= (w_f - w_i) (\text{mg}) / \text{TVA} (\text{m}^3) * 10^6 \mu\text{g}/\text{m}^3$$

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 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 $\mu\text{g}/\text{m}^3$

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 sulphanimide
- 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
- xy. Measure absorbance at 540 nm
- xvi. Calculate concentration using calibration graph
- xvii. Calculate concentration of Nitrogen Dioxide in $\mu\text{g}/\text{m}^3$

3.1.4. Sampling and analysis of Carbon Mono Oxide

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.

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:

1. 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% HNO₃ & 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 % HNO₃/ 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, m³

Q = average sampling rate, m³/min.

t = time in minutes.

ii. Metal Concentration:

$$C = (M_s - M_b) \times V_s \times F_a / V \times F_t$$

Where,

C = concentration, µg metal/m³

M_s = metal concentration µg/mL

M_b = blank concentration µg/mL

V_s = total volume of extraction in mL

F_a = total area of exposed filter in cm²

V = Volume of air sampled in m³

F_t = Area of filter taken for digestion in cm²

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 C₂₀H₁₂ 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 (1.2m³/min) sampling method capable of detecting sub.ng/m³ concentration of PAH in 24 hours sample (i.e. collected in 3 shifts of 8 hour each with 480 m³ sampling volume of air).

I. Sampling:

I. Instrument/Filter Selection:

24 hr. sampling using PM₁₀ high volume sampler with 8 hourly samples using EPM-2000 glass fibre or equivalent filter

II. Sample Processing

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 200-250mmx10 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 m³/min

T = sampling time, in min.

V = total sample volume at ambient conditions in m³

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

The concentration of PAH compound or Benzo(a)pyrene in ng /m³ in the air sampled is given by:

$$C(\text{ng}/\text{m}^3) = C_s * V_e / V_i * V_s$$

Where,

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

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

V_i : Injection Volume (i.e 1 μL)

V_s : Volume of air sample in m^3

4.0 Results

4.1 Ambient Air Quality

AMBIENT AIR QUALITY (AAQ) MONITORING TEST REPORT: SEPTEMBER 2019

Customer	M/s. Mangalore SEZ Limited
Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	CETP
Sampling Date	30.09.2019
Report Date	07.10.2019
Report No	HECS/AA/001/071019

CONSOLIDATED TEST RESULTS: SEPTEMBER 2019

Parameter Monitored	NAAQ Standard, 2009	Results
PM _{2.5} (µg/m ³)	60 [*]	23.6
PM ₁₀ (µg/m ³)	100 [*]	47.8
SO ₂ (µg/m ³)	80 [*]	16.0
NO ₂ (µg/m ³)	80 [*]	27.2
CO (mg/m ³)	2 ^{**}	BDL
O ₃ (µg/m ³)	100 ^{**}	BDL
NH ₃ (µg/m ³)	400 [*]	BDL
Pb (µg/m ³)	1 [*]	BDL
As (ng/m ³)	6 ^{***}	BDL
Ni (ng/m ³)	20 ^{***}	BDL
Benzene (µg/m ³)	5 ^{***}	BDL
B(a)P (ng/m ³)	1 ^{***}	BDL

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

Test Methods Followed:

- PM₁₀ : 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)
 SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
 NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
 O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
 NH₃ : 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)
 C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
 B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

BDL =Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide(DL 0.1 mg/m³); O₃-Ozone(DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³); B(a)P- Benzo-α-pyrene(DL 0.1 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.



(Dr K GANESAN)
Authorized Signatory

AMBIENT AIR QUALITY (AAQ) MONITORING TEST REPORT: SEPTEMBER 2019

Customer	M/s. Mangalore SEZ Limited
Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	WTP
Sampling Date	28.09.2019
Report Date	07.10.2019
Report No	HECS/AA/002/071019

CONSOLIDATED TEST RESULTS: SEPTEMBER 2019

Parameter Monitored	NAAQ Standard, 2009	Results
PM _{2.5} (µg/m ³)	60 [*]	22.3
PM ₁₀ (µg/m ³)	100 [*]	43.5
SO ₂ (µg/m ³)	80 [*]	12.7
NO ₂ (µg/m ³)	80 [*]	18.8
CO (mg/m ³)	2 ^{**}	BDL
O ₃ (µg/m ³)	100 ^{**}	BDL
NH ₃ (µg/m ³)	400 [*]	BDL
Pb (µg/m ³)	1 [*]	BDL
As (ng/m ³)	6 ^{***}	BDL
Ni (ng/m ³)	20 ^{***}	BDL
Benzene (µg/m ³)	5 ^{***}	BDL
B(a)P (ng/m ³)	1 ^{***}	BDL

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

Test Methods Followed:

PM₁₀ : 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)
 SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
 NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
 O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
 NH₃ : 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)
 C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
 B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

BDL =Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide(DL 0.1 mg/m³); O₃-Ozone(DL 10 µg/m³); NH₃- Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³); B(a)P- Benzo -α-pyrene(DL 0.1 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.




 (Dr K GANESAN)
 Authorized Signatory

5. 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	PM _{2.5} , PM ₁₀ , SO ₂ , NO ₂ , CO, O ₃ , NH ₃ , Pb, As, Ni, Benzene, B(a)P	Two Locations/Month, 24 hrs/day
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, Carbon monoxide, 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, Seasons (Summer, Winter, Post monsoon), By using grab sampling technique
3	Ambient Noise Level	Noise Level(db) in Day and Night	Two Locations, Seasons (Summer, Winter, Post monsoon), Fortnightly Interval

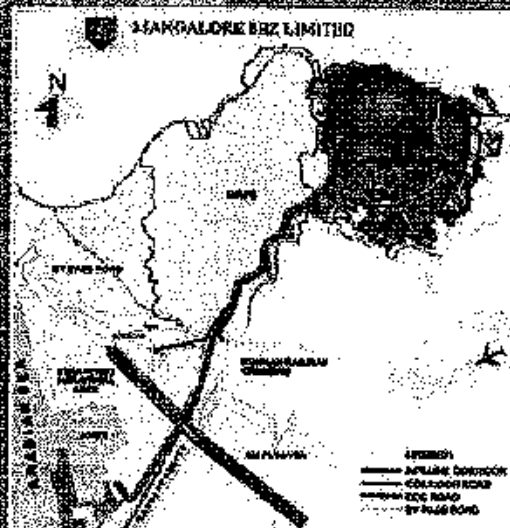


Mangalore SEZ Limited

ENVIRONMENTAL MONITORING REPORT

**AMBIENT AIR QUALITY AND MONITORING REPORT
FOR THE MONTH OF OCTOBER 2019**

Submitted to



Submitted By



M/s Hubert Enviro Care Systems Private Limited

(NABL Accredited & MOEFCC Recognized Laboratory)

7/C-45, Bankampady Industrial Estate, Mangaluru, Karnataka - 575011

Email: krom@hecs.in; kro@hecs.in

INDEX

1	Introduction - M SEZ	1
2	Environmental Monitoring	1
3	Scope and Methodology	1-10
3.1	Ambient Air Quality	1-8
4	Results	9
4.1	Ambient Air Quality	9-10
5	MSEZ Environmental Monitoring Schedule	11
6	Annexure	12 (I-x)

AMBIENT AIR QUALITY MONITORING REPORT - OCTOBER 2019

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 MoEFCC/CPCB and KSPCB statutory norms. In this regard, MSEZL has awarded the work to M/s Hubert EnviroCare Systems Pvt Ltd. and to monitor air quality, water quality & noise level for the three years. As per work order, during OCTOBER 2019, we have conducted ambient air quality at 2 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 per month. The identified monitoring stations are: A₁-CETP & A₂-WTP 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 PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂-Nitrogen di-oxide; CO-Carbon Mono Oxide (DL 0.1 mg/m³); O₃-Ozone (DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni- Nickel (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³); B(α)P- Benzo-α-pyrene(DL 0.1 ng/m³) as per CPCB stipulation.

3.1.1. Sampling and analysis of PM_{2.5} 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 eight or 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 PM_{2.5} in $\mu\text{g}/\text{m}^3$ (w_f , mg)

Calculations:

- i. Average flow rate (initial and final flow rates) in L/ min

$$= (\text{Initial flow rate} + \text{final flow rate}) / 2$$
- ii. Total vol. of air sampled (TVA) in m^3

$$= \text{Avg. flow rate (L/min)} \times 10^{-3} (\text{m}^3/\text{L}) \times \text{sampling time (hr)} \times 60 (\text{min/hr})$$
- iii. Concentration of PM in $\mu\text{g}/\text{m}^3$

$$= (w_f - w_i) (mg) / \text{TVA} (\text{m}^3) \times 10^6 \mu\text{g}/\text{m}^3$$

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 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 $\mu\text{g}/\text{m}^3$

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 $\mu\text{g}/\text{m}^3$

3.1.4. Sampling and analysis of Carbon Mono Oxide

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.

Steps:

- i. Calibration of analyzer can be carried out if required using standard gases
- ii. Sampler is allowed to warm up for some time before actual readings are taken till the sampler gives steady response and temperature stability

3.1.5. Sampling and analysis of Ozone

- i. Place 10 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 at 352 nm against a reference cuvette containing de ionized water
- viii. Calculate concentration using calibration graph
- ix. Calculate concentration of Ozone in $\mu\text{g}/\text{m}^3$

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 460Dx
- iii. Place 10 ml of absorbing media in each midjet 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 H₂SO₄). 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 NH₃ in $\mu\text{g}/\text{m}^3$

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 $\mu\text{g/ml}$.

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, m^3/min .

t = time in minutes.

ii. Metal Concentration:

$$C = (M_s - M_b) \times V_s \times F_a / V \times F_t$$

Where,

C = concentration, $\mu\text{g metal}/\text{m}^3$

M_s = metal concentration $\mu\text{g/mL}$

M_b = blank concentration $\mu\text{g/mL}$

V_s = total volume of extraction in mL

F_a = total area of exposed filter in cm^2

V = Volume of air sampled in m^3

F_t = 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 $\text{C}_{20}\text{H}_{12}$ 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 ($1.2\text{ m}^3/\text{min}$) 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 Processing

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 ($50\text{ ml} \times 2$ 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 $200\text{-}250\text{ mm} \times 10\text{ mm}$ 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 $\text{ng}/\mu\text{L}$ 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:

$$C \text{ (ng/m}^3\text{)} = C_s * V_e / V_i * V_s$$

Where,

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

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

V_i : Injection Volume (i.e 1 μL)

V_s : Volume of air sample in m^3

4.0 Results

4.1 Ambient Air Quality

AMBIENT AIR QUALITY (AAQ) MONITORING TEST REPORT: OCTOBER 2019

Customer	M/s. Mangalore SEZ Limited
Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	CETP
Sampling Date	16.10.2019
Report Date	24.10.2019
Report No	HECS/AA/001/161019

CONSOLIDATED TEST RESULTS: OCTOBER 2019

Parameter Monitored	NAAQ Standard, 2009	Results
PM _{2.5} (µg/m ³)	60 [*]	22.3
PM ₁₀ (µg/m ³)	100 [*]	48.9
SO ₂ (µg/m ³)	80 [*]	16.3
NO ₂ (µg/m ³)	80 [*]	28.4
CO (mg/m ³)	2 ^{**}	BDL
O ₃ (µg/m ³)	100 ^{**}	BDL
NH ₃ (µg/m ³)	400 [*]	BDL
Pb (µg/m ³)	1 [*]	BDL
As (ng/m ³)	6 ^{***}	BDL
Ni (ng/m ³)	20 ^{***}	BDL
Benzene (µg/m ³)	5 ^{***}	BDL
B(a)P (ng/m ³)	1 ^{***}	BDL

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

Test Methods Followed:

- PM₁₀ : 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)
 SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
 NO₂ : IS 5182 (Pt 6): 2005 (RA 2017) (Jacob and Hochheiser modified method)
 O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
 NH₃ : 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)
 C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
 B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

BDL = Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃-Ozone (DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P- Benzo-α-pyrene (DL 0.1 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.



(Dr K GANESAN)
Authorized Signatory

AMBIENT AIR QUALITY (AAQ) MONITORING TEST REPORT; OCTOBER 2019

Customer	M/s. Mangalore SEZ Limited
Address	3 rd Floor, MJDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Ambient Air Quality Monitoring (AAQ)
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Sampling Location	WTP
Sampling Date	17.10.2019
Report Date	28.10.2019
Report No	HECS/AA/002/171019

CONSOLIDATED TEST RESULTS: OCTOBER 2019

Parameter Monitored	NAAQ Standard, 2009	Results
PM _{2.5} ($\mu\text{g}/\text{m}^3$)	60 [*]	21.5
PM ₁₀ ($\mu\text{g}/\text{m}^3$)	100 [*]	45.2
SO ₂ ($\mu\text{g}/\text{m}^3$)	80 [*]	12.7
NO ₂ ($\mu\text{g}/\text{m}^3$)	80 [*]	18.1
CO (mg/m ³)	2 ^{**}	BDL
O ₃ ($\mu\text{g}/\text{m}^3$)	100 ^{***}	BDL
NH ₃ ($\mu\text{g}/\text{m}^3$)	400 [*]	BDL
Pb ($\mu\text{g}/\text{m}^3$)	1 [*]	BDL
As (ng/m ³)	6 ^{***}	BDL
Ni (ng/m ³)	20 ^{***}	BDL
Benzene ($\mu\text{g}/\text{m}^3$)	5 ^{***}	BDL
B(a)P (ng/m ³)	1 ^{***}	BDL

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

Test Methods Followed:

- PM₁₀ : 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)
 SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
 NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacobs and Hochheiser modified method)
 O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
 NH₃ : 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)
 C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
 B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

BDL =Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂ Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide(DL 0.1 mg/m³); O₃-Ozone(DL 10 $\mu\text{g}/\text{m}^3$); NH₃-Ammonia (DL 5 $\mu\text{g}/\text{m}^3$); Pb-Lead (DL 0.05 $\mu\text{g}/\text{m}^3$); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene-(DL 1 $\mu\text{g}/\text{m}^3$); B(a)P- Benzo-a-pyrene(DL 0.1 ng/m³); ng/m³: nanogram per cubic meter; $\mu\text{g}/\text{m}^3$ - microgram per cubic meter.



(Dr K GANESAN)
Authorized Signatory

5. 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	PM _{2.5} , PM ₁₀ , SO ₂ , NO ₂ , CO, O ₃ , NH ₃ , Pb, As, Ni, Benzene, B(a)P	Two Locations/Month, 24 hrs/day
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, Carbon monoxide, 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, Seasons (Summer, Winter, Post monsoon), By using grab sampling technique
3	Ambient Noise Level	Noise Level(db) in Day and Night	Two Locations, Seasons (Summer, Winter, Post monsoon), Fortnightly interval

ANNEXURE

P.No. Q-15018/13/2016-CPW
Government of India
Ministry of Environment, Forest and Climate Change
(EP Division)

Prithvi-324, Indira Park, Varanasi Bhavan,
Jor-Bagh Road, New Delhi - 110 003.

Dated, the 13th September, 2017

To
M/s Hubert Enviro Care Systems Pvt. Ltd.,
No.18, 92nd Street, Ashok Nagar,
Chennai - 600083
Tamil Nadu

Subject: Application for Renewal of Recognition of M/s Hubert Enviro Care Systems Pvt. Ltd., No.18, 92nd Street, Ashok Nagar, Chennai - 600083, Tamil Nadu as Environmental Laboratory under the Environment (Protection) Act, 1986 - regarding.

Sir,

I am directed to refer to your application submitted vide letter No. NH dated 6th August, 2016 for renewal of recognition of your laboratory under Environment (Protection) Act, 1986. Based on the recommendations of the Expert Committee for Recognition of Environmental Laboratories in its 48th meeting held on 06/02/2017 and your acceptance of the revised terms and conditions at Annexure-III & IV of the Guidelines for recognition of Environmental Laboratories, this Ministry approves the renewal of recognition of M/s Hubert Enviro Care Systems Pvt. Ltd., No.18, 92nd Street, Ashok Nagar, Chennai - 600083, Tamil Nadu for five years, as shall be notified in the Gazette of India.

2. As sought in your aforementioned application, M/s Hubert Enviro Care Systems Pvt. Ltd. may undertake the following tests:

- i. **Physical Tests:** Conductivity, Colour, pH, Fixed & volatile solids, Total solids, Total dissolved solids, Total suspended solids, Turbidity, Temperature, Velocity & discharge measurement of industrial effluent streams, Flocculation test (jar test), Odour, Salinity, Settleable solids and Sludge Volume Index (SVI)
- ii. **Inorganic (General & Non-metals):** Acidity, Alkalinity, Ammonical nitrogen, Chloride, Chlorine residual, Dissolved oxygen, Fluoride, Total hardness, Total Kjeldahl nitrogen (TKN), Nitrite nitrogen, Nitrate nitrogen, Phosphate, Sulphate, Carbon dioxide, Chlorine demand, Iodine, Sulphite, Silica, Cyanide and Sulphide
- iii. **Inorganic (Trace metals):** Boron, Cadmium, Calcium, Chromium Total, Chromium Hexavalent, Copper, Iron, Lead, Magnesium, Mercury, Nickel, Potassium, Sodium, Sodium absorption ratio, Zinc, Arsenic, Aluminium, Beryllium, Barium, Lithium, Manganese, Selenium, Silver, Strontium, Tin, Antimony, Cobalt and Vanadium
- iv. **Organics (General) and Trace Organics:** Bio-chemical oxygen demand (BOD), Chemical oxygen demand (COD), Oil & grease, Phenol, Pesticide (Organochlorine, Organonitrogen-phosphorus), Surfactants, Poly-chlorinated biphenyls (PCB).

Polynuclear aromatic hydrocarbons (PAH), Organic carbon (in solid) and Carbon/Nitrogen ratio

- v. **Microbiological:** Total coliform, Faecal coliform, Faecal streptococci, E.coli, Total plate count, Enterococcus and Coliphage
- vi. **Toxicological:** Bioassay method for evaluation of toxicity using fish, Measurement of toxicity using Daphnia or other organism and measurement of toxicity factor using zebra fish
- vii. **Biological:** Benthic organism identification and count, Macrophytic identification, Planktonic identification count, Measurement of various diversity index, Chlorophyll, Primary productivity and P/R ratio
- viii. **Soil/Sludge/Sediment and Solid Waste:** Baros, Cation Exchange Capacity (CEC), Electrical Conductivity, Nitrogen available, Organic carbon matter (chemical method), pH, Phosphorus (available), Phosphate (ortho), Phosphate (total), Potassium, SAR in soil extract, sodium, Soil moisture, TKN, Calorific value, Ammonia, Bicarbonate, Calcium, Calcium carbonate, Chloride, Colour, Exchangeable Sodium Percentage (ESP), Heavy metal, Magnesium, Mechanical soil analysis, Nitrate, Nitrite, PAH, Pesticide, Potash (available), Sulphate, Total water soluble salt and Water holding capacity
- ix. **Ambient Air Fugitive Emissions:** Nitrogen dioxide (NO_2), Sulphur dioxide (SO_2), Total suspended particulate matter, Respirable suspended particulate matter (PM_{10}), Ammonia, Carbon monoxide, Chlorine, Lead, Ozone, Benzene, Toluene, Xylene (BTX), Polycyclic aromatic hydrocarbon (PAH), Benzo-a-pyrene & others, $\text{PM}_{2.5}$ and Volatile Organic Carbon
- x. **Stack Gases/Source Emission:** Particulate matter, Sulphur dioxide, Velocity & flow, Carbon dioxide, Carbon monoxide, Temperature, Oxygen, Oxides of nitrogen, Acid mist, Ammonia, Fluoric (particulate), Fluoride (gaseous), Hydrogen sulphide, and Carbon disulphide
- xi. **Noise Level:** Noise level measurement (20 to 140 dba) and Ambient noise & source specific noise
- xii. **Meteorological:** Ambient temperature, Wind direction, Wind speed, Relative Humidity, Solar radiation and Rain fall

3. The laboratory shall compulsorily participate in the Analytical Quality Control (AQC) exercise conducted by the Central Pollution Control Board (CPCB) at least once a year to ascertain the capability of the laboratory and analyses carried out and shall submit quarterly progress reports to this Ministry.

4. Periodic surveillance of the recognized environmental laboratory will be undertaken by this Ministry/CPCB to assess its proper functioning, systematic operation and reliability of data generated at the laboratory.

5. It is also mandatory for the laboratory to have regular accreditations of the NABL/ISO 9001 and OHSAS and its renewal as per accreditation rules. Pertaining in para 3 above is subject to such accreditations and renewal, as applicable.

6. The laboratory should compulsorily follow the accepted Terms & Conditions. In case of serious non-compliance of any of the Terms and Conditions, the laboratory may be black-listed for a minimum period of two years and civil/criminal proceedings, as applicable, may be initiated for performing functions on behalf of the Government in an unauthorized manner.

Yours faithfully,


(Dr. Susan George K.)

Scientist ID

Tel. No. 011-24695439

Email: susan.george@nic.in

Copy to:

1. Member Secretary, Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, New Delhi - 110032.
2. Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai - 600 032.
3. Additional Principal Conservator of Forests (C), Ministry of Environment, Forest and Climate Change, Regional Office (SEZ), 1st and 11th Floor, Handloom Export Promotion Council, 34, Cathedral Garden Road, Nungambakkam, Chennai - 34.
4. IT Division, MoEF&CC, New Delhi - 110003 for uploading of MoEF&CC website.

Speed Post

No.Q.15018/42/2014-CPW
Government of India
Ministry of Environment, Forest & Climate Change
CP Division

Indira Paryavaran Bhawan,
Prithvi, 2nd Floor,
Jorbagh Road, Aliganj,
New Delhi-110 003,
Dated: 19th August, 2016

To,

M/s Hubert Enviro Care Systems Pvt. Ltd.
No. C-45, Industrial Estate, Balkampady,
Mangalore- 575011,
Karnataka.

Subject: Recognition of M/s Hubert Enviro Care Systems Pvt. Ltd. No. C-45, Industrial Estate, Balkampady, Mangalore- 575011, Karnataka as Environmental Laboratory under the Environment (Protection) Act, 1986 - reg.

Sir,

Kindly refer to your letter no. nil Dated 17.12.2014 approval for recognition of laboratory under Environment (Protection) Act, 1986. Based on the recommendation of the 44th meeting of Expert Committee for recognition of environmental laboratories held on 09.10.2015 & 14.10.2015 and your acceptance of the terms & conditions at Annexure -III, IV&V of guidelines for recognition of environmental laboratories under the Environment (Protection) Act, 1986, this Ministry approves the recognition of your laboratory for five years as shall be notified in the Gazette of India.

2. The laboratory shall compulsorily participate in the Analytical Quality Control (AQC) exercise conducted by the Central Pollution Control Board, at least once a year to ascertain the capability of the laboratory and analysis from time to time and to provide quarterly progress reports of your laboratory to the MoEF&CC.

3. Periodic surveillance of recognized Environmental Laboratory under Environment (Protection) Act, 1986 will be undertaken by MoEF&CC/Central Pollution Control Board (CPCB) to assess its proper functioning, systematic operation and reliability of data generated at the laboratory.

4. It is also mandatory for the laboratory to renew NABL, ISO 9001:2008, ISO 14001:2004 and OHSAS from time to time.

Yours faithfully,


(Dr. (Ms.) Rubab Jaffer),
Deputy Director.

CERTIFICATE



Hubert Enviro Care Systems (P) Ltd.

Registration Date 2018-09-17
Expiration Date 2021-09-18
Initial Registration Date 2018-09-17
Revision Date 2018-09-17
Certificate Number AC-07045

• HQ : #18, 82nd Street, Ashok Nagar, Chennai, Tamilnadu, India (Zip code : 600083)
• Mangalore office : #C-45 Industrial Estate, Baikampadi, Mangalore, Karnataka, India (Zip code : 575011).

*Korean Foundation for Quality certifies that
The Quality Management System of
the above organization has been audited and
has complied with the requirements of
the following standard*

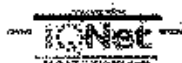
Standard

ISO 9001:2015/KS-Q ISO 9001:2015

Scope of certification

PROVISION OF ENVIRONMENTAL MANAGEMENT
CONSULTANCY, TURNKEY ENVIRONMENTAL MANAGEMENT
PROJECTS, OPERATION AND MAINTENANCE OF ETP / STP /
WTP AND OTHER ENVIRONMENTAL INSTALLATION
LABORATORY TESTING COVERING CHEMICAL /
MICROBIOLOGICAL / ENVIRONMENTAL / FOOD AND AGRI
PRODUCTS / WATER / CONSUMER PRODUCTS AND ALLIED
ACTIVITIES

• PERMITTED EXEMPTION (8.3 DESIGN & DEVELOPMENT OF
PRODUCTS AND SERVICES)



KFQ has been accredited in respect of ISO 9001 covered by the
KAB Accreditation Certificate Number KAB-QC-011

IAF, Mookim Lane, Vijaya Vittala Bldg, 8, 88, Gopuram Road, Bangalore-56, India (560002), India

Daehyeon Nam
President & CEO of KFQ

www.kfq.or.kr

CERTIFICATE



Registration Date 2018-09-20
Expiration Date 2021-09-19
Initial Registration Date 2018-09-20
Revision Date 2018-09-20
Certificate Number EAC-07949

Hubert Enviro Care Systems (P) Ltd.

• HO : #18, 92nd Street, Ashok Nagar, Chennai, Tamilnadu,
India (Zip code : 600055)
• Mangalore office : #C-48 Industrial Estate, Belkempatti,
Mangalore, Karnataka, India (Zip code : 575011)

*Korean Foundation for Quality certifies that
The Environmental Management System of
the above organization has been audited and
has complied with the requirements of
the following standard*

Standard

ISO 14001:2015/KS I ISO 14001:2015

Scope of certification

PROVISION OF ENVIRONMENTAL MANAGEMENT
CONSULTANCY, TURNKEY ENVIRONMENTAL MANAGEMENT
PROJECTS, OPERATION AND MAINTENANCE OF ETP / STP /
WTP AND OTHER ENVIRONMENTAL INSTALLATION
LABORATORY TESTING COVERING CHEMICAL /
MICROBIOLOGICAL / ENVIRONMENTAL / FOOD AND AGRI
PRODUCTS / WATER / CONSUMER PRODUCTS AND ALLIED
ACTIVITIES



(KAB-EC-Q11)



KFQ has been accredited in respect of ISO 14001 covered by the
KAB Registration Certificate Number EAC-EC-09

10F, Woorin Lioris Valley Bldg. 15, 168, Gaseon-dong 1-ro, Gounicheon-gu, Seoul, 04551, Korea

Raehyun Nam
Lic. Auditor
President & CEO of KFQ

www.kfq.or.kr



THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

KFQ has issued an IQNet recognized certificate that the organization:

Hubert Enviro Care Systems (P) Ltd.

- HQ : #18, 32nd Street, Ashok Nagar, Chennai, Tamilnadu, India (Zip code : 600083)
- Mangalore office : #C-45 Industrial Estate, Balkampadi, Mangalore, Karnataka, India (Zip code : 575011)

for the following scope

PROVISION OF ENVIRONMENTAL MANAGEMENT CONSULTANCY, TURNKEY ENVIRONMENTAL MANAGEMENT PROJECTS, OPERATION AND MAINTENANCE OF ETP / STP / WTP AND OTHER ENVIRONMENTAL INSTALLATION
LABORATORY TESTING COVERING CHEMICAL / MICROBIOLOGICAL / ENVIRONMENTAL / FOOD AND AGRI PRODUCTS / WATER / CONSUMER PRODUCTS AND ALLIED ACTIVITIES

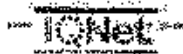
*has implemented and maintains a
Environmental Management System
which fulfils the requirements of the following standard
ISO 14001:2015*

Issued on : 2018-09-20

First issued on : 2018-09-20

For the validity date, please refer to the original certificate issued by KFQ

Registration Number : KR - 07043



Alex Stoichitatu
President of IQNet

Das Hyoun Nam
President & CEO of KFQ



IQNet Partners:
AFNOR Spain AFNOR Certification France APSCB Portugal CQC Cyprus CIBQ Italy
CQC China CQM China CQS Czech Republic Cst Cert Canada DQS Holding GmbH Germany FCAV Brazil
FONDONORMA Venezuela ICONTES Colombia Intertek Certification Oy Finland BRVEDO Costa Rica
IRAM Argentina JQA Japan KFQ Korea MIRTEC Greece MSZT Hungary Nordin AS Norway NSAI Ireland
NYCE-SKIE Mexico PCBC Poland Quality Austria Austria-ER Russia SII Israel SIO Slovakia
SIRM QAS International Malaysia SGS Switzerland BRAC Romania TEST S1 Petersburg Russia TSE Turkey YUQS Serbia
IQNet is represented in the USA by: APNOR Certification, CIBQ, DQS Holding GmbH and NSAI Inc.

* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com



**National Accreditation Board for
Testing and Calibration Laboratories**
(A Constituent Board of Quality Council of India)



CERTIFICATE OF ACCREDITATION

**HUBERT ENVIRO CARE SYSTEMS
PRIVATE LIMITED**

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2005

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

7/C-45, Baikampady Industrial Estate, Mangaluru, Karnataka

in the field of

TESTING

Certificate Number **TC-7920** (in lieu of T-3190)

Issue Date **31/10/2018**

Valid Until **30/10/2020**

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.

(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Signed for and on behalf of NABL



95076970330030002021

Amal Rella

Amal Rella
Chief Executive Officer



**National Accreditation Board for
Testing and Calibration Laboratories**
(A Constituent Board of Quality Council of India)



CERTIFICATE OF ACCREDITATION

HUBERT ENVIRO CARE SYSTEMS PVT LTD

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

**"General Requirements for the Competence of Testing &
Calibration Laboratories"**

for its facilities at

NO 18, 92ND STREET, ASHOK NAGAR, CHENNAI, TAMIL NADU, INDIA

in the field of

TESTING

Certificate Number: TC-3786

Issue Date: 30/04/2019

Valid Until: 29/04/2021

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Signed for and on behalf of NABL



N. Venkateswaraiah
Chief Executive Officer

CERTIFICATE



Korean
Foundation
for Quality

Registration Date 2018-09-20
Expiration Date 2021-09-19
Initial Registration Date 2018-09-20
Revision Date 2018-09-20
Certificate Number SAC-07046

Hubert Enviro Care Systems (P) Ltd.

- HQ : #18, 92nd Street, Ashok Nagar, Chennai, Tamilnadu, India (Zip code : 600083)
- Mangalore site : #C-45 Industrial Estate, Balkampadi, Mangalore, Karnataka, India (Zip code : 575011)

*Korean Foundation for Quality certifies that
The Occupational Health and Safety Management
System of the above organization has been
audited and has complied with the requirements
of the following standard*

Standard

OHSAS 18001:2007/K-OHSMS 18001:2007

Scope of certification

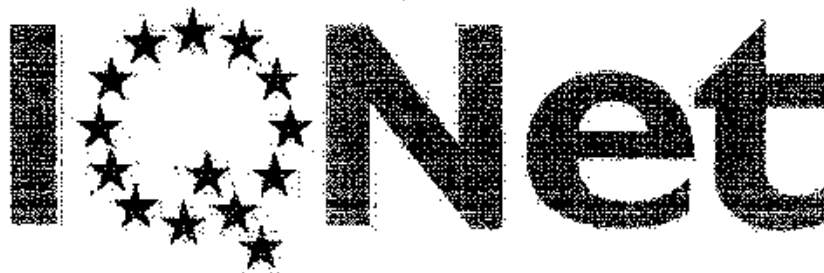
**PROVISION OF ENVIRONMENTAL MANAGEMENT
CONSULTANCY, TURNKEY ENVIRONMENTAL MANAGEMENT
PROJECTS, OPERATION AND MAINTENANCE OF ETP / STP /
WTP AND OTHER ENVIRONMENTAL INSTALLATION
LABORATORY TESTING COVERING CHEMICAL /
MICROBIOLOGICAL / ENVIRONMENTAL / FOOD AND AGRI
PRODUCTS / WATER / CONSUMER PRODUCTS AND ALLIED
ACTIVITIES.**



The use of Accreditation Mark indicates accreditation in respect of
those activities covered by the KAB (Korean Accreditation Certificate) KAB-OC-011

Daehyun Nam
The President & CEO of KFQ

www.kfq.or.kr
13F, Wodlim Clark Valley Bldg. B, 168, Gasan digital 1-ro, Gyeongcheon-gu, Seoul, 168-706, Korea



THE INTERNATIONAL CERTIFICATION NETWORK
CERTIFICATE

KFQ has issued an IQNet recognized certificate that the organization:

Hubert Enviro Care Systems (P) Ltd.

- HO : #18, 92nd Street, Ashok Nagar, Chennai, Tamilnadu, India (Zip code : 600083)
- Mangalore site : #C-45 Industrial Estate, Balkampadi, Mangalore, Karnataka, India (Zip code : 575011)

for the following scope

**PROVISION OF ENVIRONMENTAL MANAGEMENT CONSULTANCY, TURNKEY ENVIRONMENTAL MANAGEMENT PROJECTS, OPERATION AND MAINTENANCE OF ETP / STP / WTP AND OTHER ENVIRONMENTAL INSTALLATION
LABORATORY TESTING COVERING CHEMICAL / MICROBIOLOGICAL / ENVIRONMENTAL / FOOD AND AGRI PRODUCTS / WATER / CONSUMER PRODUCTS AND ALLIED ACTIVITIES**

has implemented and maintains a
Occupational Health and Safety Management System
which fulfils the requirements of the following standard

OHSAS 18001:2007

Issued on : 2018-09-20

First issued on : 2018-09-20

For the validity date, please refer to the original certificate issued by KFQ*

Registration Number : KR - 07046

IQNet

Alex Stoichitoiu
President of IQNet

Dae-Hyeon Nam
President & CEO of KFQ

kfq

IQNet Partners*
AENOR Spain APNOR Certification France APCER Portugal CCC Cyprus CISO Italy
CQC China CQM China CQS Czech Republic Cro Cert Croatia DQS Holding GmbH Germany PCAV Brazil
FONDOHORMA Venezuela ICONTEC Colombia Inspecta Serdubinski Oy Finland INTECO Costa Rica
IRAM Argentina IQA Japan KPC Korea MITEC Greece MSZT Hungary Nemko AS Norway NSAI Ireland
NYCE-SIGE Mexico PCBC Poland Quality Austria Austria RR Russia SII Israel SIQ Slovenia
SIRIM QAS International Malaysia SQS Switzerland SRAC Romania TEST St Petersburg Russia TSE Turkey YUQS Serbia
IQNet is represented in the USA by: APNOR Certification, CISO, DQS Holding GmbH and NSAI Inc.

*The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com



ओ एन जी सी मंगलूर पेट्रोकेमिकल्स लिमिटेड

(मंगलूर रिफाइनरी एण्ड पेट्रोकेमिकल्स लिमिटेड की सहायक कंपनी)

ONGC Mangalore Petrochemicals Ltd.

(A Subsidiary of Mangalore Refinery & Petrochemicals Ltd.)

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

एम्प्लोईज्ड वेगुदे, मंगलूर - 574 509 MSEZ, Pernode, Mangaluru - 574 509.

CIN : U40107KA2006GD041258 दूरभाष Direct Line: 0824-2872000, फैक्स Fax: 0824-2872005. Website: www.ompl.co.in

OMPL/MoEF/RP/2019-20

Date: 27.11.2019

To:

The Head Technical
MSEZL, Mangalore

Dear Sir,

Mangalore SEZ Ltd. - 5534
Documents & Contents subject to verification
Received date: 03.12.2019
Received by: V. R. Shetty

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, 2019 to September, 2019

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,

Ramakantha Prabhu
Chief Manager (EN)

Vinay Kumar
Checked / Disposed for any
compliance
03/12

CC: CEO, OMPL for info
CC: COO, OMPL for info.

Compliance to Environmental Clearance

Issued by MoEF vide letter No. 21-393/2007-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, O/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 CR2-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
2	Isomerization Unit (ISOMER) : 3.16 MMTPA	Complied
3	Transalkylation & Disproportionation Unit (TADP) :1.71 MMTPA	Complied
4	Paraxylene Recovery (PXREC) :4.07 MMTPA	Complied
5	Xylene Fractionation Unit : 4.64 MMTPA	Complied
6	Aromatics Extraction Unit : 0.79 MMTPA	Complied
7	Benzene Toluene Fractionation Unit : 2.2 MMTPA	Complied
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 Maintenance 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 MZEE 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/HP/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 Atsurkoti area of Kuthelloor 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 (30.09.2019)
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 SO ₂ , 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 (SO ₂ , 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 is executing Green Belt Development program at OMPL, with WO value being RS 1.2 Crore. Development & Maintenance phase of GBD is approximately 4 years upto 2020. 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, <i>Acacia ferruginea</i> DC (Mimosaceae), <i>Acacia nilotica</i> * (Mimosaceae), <i>Ailanthus excelsa</i> * (Simaroubaceae), <i>Albizia amara</i> (Mimosaceae), <i>Albizia labbeck</i> * (Mimosaceae), <i>Albizia daratissima</i> (Mimosaceae), <i>Alistonia scholaris</i> * (Apocynaceae), <i>Annogeissus latifolia</i> (Combretaceae), <i>Artocarpus integrifolia</i> (Moraceae), <i>Artocarpus lacucha</i> (Moraceae), <i>Azadirachta indica</i> (Meliaceae), <i>Bauhinia malabarica</i> (Fabaceae), <i>Bauhinia racemosa</i> * (Caesalpiniaceae), <i>Butea monosperma</i> (Fabaceae), <i>Caesalpinia pulcherrima</i> * (Caesalpiniaceae), <i>Colophyllum tomentosum</i>, <i>Cane</i> sp. (Palmae), <i>Conno orientalis</i> (Cannaceae), <i>Cassia fistula</i> (Caesalpiniaceae), <i>Cassia siamea</i> (Caesalpiniaceae), <i>Casuarina equisetifolia</i> (Casuriaceae), <i>Chlorophytum tuberosum</i> (Liliaceae), <i>Dalbergia sissoo</i> (Fabaceae), <i>Dalbergia latifolia</i> (Fabaceae)
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 173.4 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 LSMS, HSD & FG fuels. Please note 'SO2' emission from EIA report for the project is estimated as 13.68 TPD. However, Avg SOx emission per day is ~ 0.78 MTPD
18	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, 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 Atroil
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 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	AAQM monitoring is carried out as per MAAQM 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 MAAQM 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 emissions 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 boundary, 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 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	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 * In case 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 Netel India Ltd, since 2016.
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 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 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	Oil 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 oil 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 clearances as prescribed by the concerned agencies	NA
8 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	KSPEB 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 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	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 KSPEB. 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 ETP 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)	<u>Sources:</u> Pumps, Compressors & Turbines. <u>Attenuation measures:</u> It is ensured at design stage that Noise level at a distance of 3 mt from the equipment is < 90 db (A) by providing acoustic hoods, silencers, enclosures etc. as appropriate & at plant boundary is less than 75 dB in daytime & 70 dB in night time as per the Legal requirement
7	The project authorities shall strictly comply 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 Factorles 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 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	Agreed. Further the Amount spent/budgeted on Environment Management requirement is approximately RS 1.4 Crore
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 clearance 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 commissioning 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 fledged 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 clearance, 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 - alla 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.

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 NHF platforming units, High severity Cyclomax 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 m ³ & the other at OSBL area with 6000 m ³ 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 m ³ /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 H ₂ SO ₄ 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 systems (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 halogenated 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 (eg 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, stage-wise
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 followed during disposal of Hazardous Wastes. Temporary Waste Storage facility is constructed of about ~ 2000 m ² 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 tail 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 Organisation (PESQ) approvals are being taken for bulk storage of Hazardous chemicals (Petroleum) wherein requirements of the WSHC Rules, 1989 is considered
12	Self-regulation by industry through monitoring and 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.	environmental 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



ओ एन जी सी मंगलूर पेट्रोकेमिकल्स लिमिटेड

(मंगलूर रिफाइनरी एण्ड पेट्रोकेमिकल्स लिमिटेड की सहायक कंपनी)

ONGC Mangalore Petrochemicals Ltd.

(A Subsidiary of Mangalore Refinery & Petrochemicals Ltd.)

एमएसईजेड पेरुदे, मंगलूर - ५७४ ५०९ MSEZ, Perumde, Mangaluru - 574 509.

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

REF: OMPL/PCB/HRP/2019-20/

Date: 21/06/2019

To:

The Environmental Officer

Regional Office

KSPCB

Baikampady, Mangalore-11

Dear Sir,

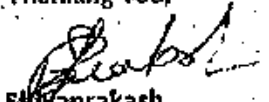
Sub: Submission of Environmental Monitoring Report for the Month of May, 2019.

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 May, 2019 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. Plant was under Shut Down for Maintenance Activity and later due to water scarcity
6. Manifest Report as Annexure-E

Thanking You,


Sh. V. Prakash

Senior Manager (Env)

CC: Member Secretary, KSPCB, Bangalore

CC: Head (Technical), MSEZ

CC: CEO, OMPL for info

CC: COO, OMPL for info

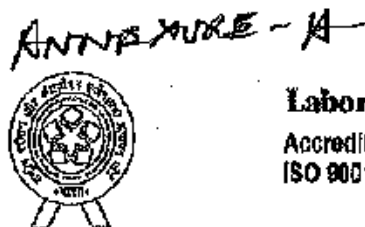
Hubert Enviro Care Systems (P) Ltd.

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

H.O.: # 10, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42885555 Fax : 42885500 E-mail : labsales@hecs.in



Laboratory Services Division

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

AMBIENT AIR QUALITY MONITORING TEST REPORT - MAY 2019

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	11.06.2019
Report No	HECS/AA/001/110619

CONSOLIDATED TEST RESULTS

MAY '19 - Week		19-Week	20-Week		21-Week		22-Week		23-Week	Avg. Value
Parameters	NAAQ	02.05.19	06.05.19	09.05.19	13.05.19	16.05.19	20.05.19	23.05.19	29.05.19	
PM _{2.5} (µg/m ³)	60	18.7	18.6	17.9	18.8	20	18.9	19.1	20.2	19.03
PM ₁₀ (µg/m ³)	100	42.4	42.8	44	43.8	40	40.4	43.4	42.5	42.16
SO ₂ (µg/m ³)	80	4.1	3.7	3.9	4.7	3.8	4.6	3.4	4.0	4.03
NO ₂ (µg/m ³)	80	5.5	4.9	6.1	5.3	5.1	4.2	4.4	4.9	5.05
CO (mg/m ³)	2.0	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)	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6.0	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)	05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂-Sulphur dioxide; NO₂ - Nitrogen-dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃-Ozone (DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P- Benzo-α-pyrene (DL 0.5 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory

1. The report is full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. The test results shall be valid only for the test item. 3. Under no circumstances lab accepts any liability or loss/damage caused by use or reuse of test report after invalidation/loss of test report. 4. The test results shall be valid only for the test item. 5. The test results shall be valid only for the test item. 6. Not under scope of accreditation.

Hubert Enviro Care Systems (P) Ltd.

C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

H.O.: # 16, 82nd Street, Ashok Nagar, Chennai - 600 093.

Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

**Laboratory Services Division**Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5788

AMBIENT AIR QUALITY MONITORING TEST REPORT - MAY 2019

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	11.06.2019
Report No	HECS/AA/002/110619

CONSOLIDATED TEST RESULTS

MAY '19 - Week		19-Week	20-Week		21-Week		22-Week		23-Week	Avg. Value
Parameters	NAAQ	02.05.19	06.05.19	09.05.19	13.05.19	16.05.19	20.05.19	23.05.19	29.05.19	
PM _{2.5} (µg/m ³)	60	18.2	19.6	19.5	19.5	19.1	19.2	20.4	19.7	19.40
PM ₁₀ (µg/m ³)	100	41.7	42.4	40.8	42.8	41.7	42	41.6	42.3	41.91
SO ₂ (µg/m ³)	80	3.6	3.8	4.2	3.7	3.1	4.2	3.5	3.4	3.69
NO ₂ (µg/m ³)	80	3.8	3.4	3.8	3.7	3.3	3.4	4.4	3.9	3.71
CO (mg/m ³)	2.0	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)	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6.0	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)	05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:PM₁₀ : 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)SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geaka method)NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)NH₃ : 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)

C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)

B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene - (DL 1 µg/m³); B(a)P - Benzo - α - pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory

Dr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoking or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

Hubert Enviro Care Systems (P) Ltd.

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2408111, Email: kro@hecs.in, WebSite: www.hecs.in

H.O.: # 19, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985555 Fax: 42985600 E-mail: labsales@hecs.in

**Laboratory Services Division**Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

AMBIENT AIR QUALITY MONITORING TEST REPORT-MAY 2019

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	11.06.2019
Report No	HECS/AA/003/110619

MAY '19 - Week		19-Week	20-Week			21-Week		22-Week		23-Week	Avg. Value
Parameters	NAAQ	02.05.19	05.05.19	09.05.19	13.05.19	16.05.19	20.05.19	23.05.19	29.05.19		
PM _{2.5} (µg/m ³)	60	20.2	20.1	20.2	21.1	20.2	21.1	21.2	20.3		20.55
PM ₁₀ (µg/m ³)	100	43.1	41.7	40.9	42.1	40.8	42.9	42.2	41.5		41.90
SO ₂ (µg/m ³)	80	4.4	4.9	4.9	4.4	4.8	3.9	4.4	4.7		4.55
NO ₂ (µg/m ³)	80	6.3	5.6	5.7	5.5	6.5	5.3	6.6	5.8		5.91
CO (mg/m ³)	2.0	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)	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL		BDL
As (ng/m ³)	6.0	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)	05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL		BDL
B(a)P (ng/m ³)	01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL		BDL

Test Methods Followed:

PM₁₀ : 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)
 SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
 NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
 O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
 NH₃ : 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)
 C₆H₆ : GC FID/GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
 B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron;
 SO₂-Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃-Ozone (DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³); B(a)P- Benzo-α-pyrene (DL 0.5 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory

Dr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent of HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results shall only be of the test items. 6. Not under scope of accreditation.

Hubert Enviro Care Systems (P) Ltd.

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2406111, Email: kro@hecs.in, Website: www.hecs.in

H.O.: # 1B, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985655 Fax: 42985600 E-mail: lab@hecs.in

**Laboratory Services Division**Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

AMBIENT AIR QUALITY MONITORING TEST REPORT - MAY 2019

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	Premude Village
Report Date	11.06.2019
Report No	HECS/AA/004/110619

CONSOLIDATED TEST RESULTS

MAY '19 - Week		19-Week	20-Week		21-Week		22-Week		23-Week	Avg. Value
Parameters	NAAQS	02.05.19	06.05.19	09.05.19	13.05.19	16.05.19	20.05.19	23.05.19	29.05.19	
PM _{2.5} (µg/m ³)	60	19.7	19.6	19.9	20.6	20.2	18.9	19.4	19.1	19.58
PM ₁₀ (µg/m ³)	100	40.5	41.4	41.7	41.3	40.8	41.2	40.1	41.1	41.01
SO ₂ (µg/m ³)	80	5.1	5.4	5	4.9	5.1	4.9	5.1	5.3	5.10
NO ₂ (µg/m ³)	80	6.3	6.1	5.7	6.1	5.5	5.3	5.6	5.9	5.81
CO (mg/m ³)	2.0	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)	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6.0	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)	05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:PM₁₀ : 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)SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)NH₃ : 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)

C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)

B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P - Benzo-a-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

****End of Report****

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

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by the organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results refer only to the test items. 6. Not under scope of accreditation.

Hubert Enviro Care Systems (P) Ltd.

G-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2406111, Email: kro@hecs.in, Website: www.hecs.in

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

AMBIENT AIR QUALITY MONITORING TEST REPORT - MAY 2019

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	11.06.2019
Report No	HECS/AA/005/110619

CONSOLIDATED TEST RESULTS

MAY '19 - Week		19-Week	20-Week		21-Week		22-Week		23-Week	Avg. Value
Parameters	NAAQ	02.05.19	06.05.19	09.05.19	13.05.19	16.05.19	20.05.19	23.05.19	29.05.19	
PM _{2.5} (µg/m ³)	60	19.8	20.1	20.5	20.1	20.7	21	20	19.9	20.26
PM ₁₀ (µg/m ³)	100	41.8	41.5	40.2	41.5	41.2	41.4	41.6	40.8	41.25
SO ₂ (µg/m ³)	80	4.5	4.2	4.8	5.2	5.6	4.7	5.3	4.7	4.88
NO ₂ (µg/m ³)	80	6.6	6.8	6.3	6.7	6.5	6.4	6.1	6.5	6.49
CO (mg/m ³)	2.0	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)	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6.0	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)	05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P - Benzo - a-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory
(Dr. K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after its closing or its use of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

ANNEXURE-B

Hubert Enviro Care Systems (P) Ltd.

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

H.Q.: # 18, 82nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in



Laboratory Services Division

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF GROUND WATER QUALITY MONITORING

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, Premude
Sample drawn by	HECS
Date of Sampling	16.05.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	16.05.2019
Date of Analysis start & completion	17.05.2019 & 31.05.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.06.2019
Report No	HECS/W/001/160519

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	6.54	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	277.2	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	59.5	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	112.88	200 max
9.	Chloride as Cl ⁻	IS 3025 (Part-32) 1988	mg/L	73.9	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	31.3	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	150	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	BDL (DL 5)	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	0.14	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	8.4	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	0.14	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(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



Authorized Signatory
Dr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS Organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test reports for involving or issue of test report. 5. The test result is related only to the test items. 6. Not under scope of accreditation.

Hubert Enviro Care Systems (P) Ltd.

C-45, Industrial Estate, Belkempady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2404111, Email: kro@heca.in, Website: www.hecs.in

H.O.: # 16, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42885555 Fax: 42885500 E-mail: labsales@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF GROUND WATER QUALITY MONITORING

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 Gagnet Labour Colony
Sample drawn by	HECS
Date of Sampling	16.05.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	16.05.2019
Date of Analysis start & completion	17.05.2019 & 31.05.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.06.2019
Report No	HECS/W/002/160519

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	6.52	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	106.92	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	22.22	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	43	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	27.59	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	12.51	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	150	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	BDL (DL 5)	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	4.3	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	0.02	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(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



Authorized Signatory
K. Ganeshan - Lab Manager

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 093,
Ph: 42985666 Fax: 42985600 E-mail: labsales@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF GROUND WATER QUALITY MONITORING

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	16.05.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	16.05.2019
Date of Analysis start & completion	17.05.2019 & 31.05.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.06.2019
Report No	HECS/W/003/160519

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	6.68	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	134.7	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	28.57	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	40.9	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	25.3	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	15.4	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	150	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	BDL (DL 5)	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.5	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	0.02	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	<i>Escherichia coli</i>	IS 1622:1981(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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2406111, Email: kro@hecs.in, Website: www.hecs.in

H.O.: # 18, 82nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42885555 Fax: 42885500 E-mail: labsales@hecs.in



Certificate No. TC-5786

Laboratory Services Division

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF GROUND WATER QUALITY MONITORING

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	16.05.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	16.05.2019
Date of Analysis start & completion	17.05.2019 & 31.05.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.06.2019
Report No	HECS/W/004/160519

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	6.61	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	217.8	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	51.6	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	80.63	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	147.8	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	21.7	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	230	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	BDL (DL 5)	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.3	45 max
15.	Iron as Fe	IS3025 (Part-53) 2003	mg/L	0.06	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS3025 (Part-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



Authorized Signatory
Per K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability for loss or damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : lab@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF OPEN WELL WATER QUALITY MONITORING

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	16.05.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	16.05.2019
Date of Analysis start & completion	17.05.2019 & 31.05.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.06.2019
Report No	HECS/W/005/160519

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	6.57	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	55.44	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	11.11	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	6.5	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	38.43	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	6.73	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	150	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	BDL (DL 5)	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.2	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	BDL (DL 0.02)	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Notes: 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



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

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 10 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invalidating or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: # 18, 82nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42986655 Fax: 42985500 E-mail: labsales@hecs.in



Certificate No. TC-5786

Laboratory Services Division

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF OPEN WELL WATER QUALITY MONITORING

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	16.05.2019
Qty. of sample received	2 L In HDPE Can + 100 sterile container
Date of sample received	16.05.2019
Date of Analysis start & completion	17.05.2019 & 31.05.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.06.2019
Report No	HECS/W/006/160519

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	6.55	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	87.12	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	11.11	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	12.9	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	34	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	14.43	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	150	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	BDL (DL 5)	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.3	45 max
15.	Iron as Fe	IS3025 (Part-53) 2003	mg/L	BDL (DL 0.02)	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS3025 (Part-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



[Signature]
Authorized Signatory

Dr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 16 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability for loss/damage caused by any or mis use of test report after its printing or issue of test report. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

Hubert Enviro Care Systems (P) Ltd.

C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 576011.

Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

H.O.: # 18, 82nd Street, Ashok Nagar, Chennai - 800 083.

Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

**Laboratory Services Division**Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF OPEN WELL WATER QUALITY MONITORING

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 Premude Village
Sample drawn by	HECS
Date of Sampling	16.05.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	16.05.2019
Date of Analysis start & completion	17.05.2019 & 31.05.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.06.2019
Report No	HECS/W/007/160519

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	6.62	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	186.1	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	31.74	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	26.88	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	101.01	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	26.5	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	150	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	BDL (DL 5)	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	4.1	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	BDL (DL 0.02)	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	<i>Escherichia coli</i>	IS 1622:1981(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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless as otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 10 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoking or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: W 10, 92nd Street, Ashok Nagar, Chennai - 600 083.
 Ph: 42985555 Fax: 42985600 E-mail: labsales@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
 ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF SURFACE WATER QUALITY MONITORING

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	16.05.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	16.05.2019
Date of Analysis start & completion	17.05.2019 & 31.05.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.06.2019
Report No	HECS/W/008/160519

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	7.43	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	106.92	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	30.15	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	38.7	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	37.44	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	7.69	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	160	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	BDL (DL 5)	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	4.1	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	BDL (DL 0.02)	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	<i>Escherichia coli</i>	IS 1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Notes: 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



Authorized Signatory
 Mr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise monitored. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances the acceptance of liability or loss/damage caused by use or misuse of test report after invaliding or issue of test report. 5. The test results relate only to the test items. 6. It is not under scope of accreditation.

ANNEXURE - 2

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: # 18, B2nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in



Laboratory Services Division

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

NOISE MONITORING TEST REPORT - MAY 2019

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	04.05.2019
Report Date	11.06.2019
Report No.	HECS/N/001/110619

RESULTS

S.No.	Sampling Location	MoEFCC requirements in dB		Avg. Noise level observed in dB	
		Day	Night	Day	Night
1.	OMPL-North	75	70	68.8	67.1
2.	OMPL-South			68.5	65.2
3.	OMPL-East			69.6	67.3
4.	OMPL-West			70.2	67.1

Note: dB: Decibel

Limits: Industrial Areas: 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*****




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

Hubert Enviro Care Systems (P) Ltd.

C-45, Industrial Estate, Bakkampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

H.O.: # 1B, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42885555 Fax: 42986600 E-mail: labsales@hecs.in



Certificate No. TC-5786

Laboratory Services Division

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF ETP EFFLUENT MONITORING

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	04.05.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	04.05.2019
Date of Analysis start & completion	04.05.2019 & 17.05.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.06.2019
Report No	HECS/VW/002/040519

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
1.	Color	IS:3025:(Pt 4)1983(RA 2006)	Hazen Units	Colourless	All efforts should be made to remove colour and unpleasant odour as far as practicable
2.	Odour	IS 3025 (Part5)-1983,RA 2006	-	Agreeable	
3.	Total Suspended Solids	2540D APHA 22nd Edn.. 2012	mg/L	26	100
4.	pH	IS:3025:(Pt 11):1983(RA 2006)	-	7.71	6.0-8.5
5.	Temperature	IS 3025 (Pt 9):1983(RA:2006)	°C	32	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 Part (34)1988	mg/L	6	50
9.	Total Kjeldhal Nitrogen as N	IS 3025 Part (34)1988	mg/L	31.8	100
10.	Free Ammonia as NH ₃	IS:3025 (Part34)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	20.3	30
12.	COD as O ₂	IS 3025 Part (58)2006	mg/L	55.5	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 Part (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 (Part49)1994(RA 2009)	mg/L	BDL (DL 0.1)	5.0



Authorized Signatory
Dr K Ganusan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECSD. 2. Samples are not drawn by HECSD unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by us or our users of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

Hubert Enviro Care Systems (P) Ltd.

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408181, Email: kro@hecs.in, Website: www.hecs.in

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF ETP EFFLUENT MONITORING

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	04.05.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	04.05.2019
Date of Analysis start & completion	04.05.2019 & 17.05.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.05.2019
Report No	HECS/WW/002/040519

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
18.	Nickel as Ni	IS:3025 (Part54):2003 (RA 2009)	mg/L	BDL (DL 0.05)	1.0
19.	Fluoride as F-	IS 3025 part (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 22nd Edition	.	Passed through 850 micron	850 micron
22.	Arsenic as As	IS:3025 (Part37):1988(RA 2009)	mg/L	BDL (DL 0.005)	0.2
23.	Mercury as Hg	IS:3025 (Part48):1994 RA 1999	mg/L	BDL (DL 0.001)	0.01
24.	Cadmium as Cd	IS:3025 (Part41):1991	mg/L	BDL (DL 0.01)	0.1
25.	Selenium as Se	IS:3025 (Part56):2003	mg/L	BDL (DL 0.005)	0.05
26.	Cyanide as CN	IS:3025 (Part27):1986 RA. 2009	mg/L	BDL (DL 0.01)	0.2
27.	Phenols as C ₆ H ₅ OH	IS 3025 Part (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	0.08	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 (Part56):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(Part 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 EFFLUENT WATER AS ABOVE PARAMETERS ARE WITHIN STANDARDS

End of Report



Authorized Signatory
(K. Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECs organization. 2. Samples are not drawn by HECs unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability for loss/damage caused by use or misuse of test report after inverting or misuse of test report. 5. The test results are valid only for the test items. 6. Not under scope of accreditation.

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: labsafes@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF ETP EFFLUENT MONITORING

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	16.05.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	16.05.2019
Date of Analysis start & completion	16.05.2019 & 31.05.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.06.2019
Report No	HECS/WW/005/160519

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
1.	Color	IS:3025:(Pt 4):1983 (RA 2006)	Hazen Units	Colourless	All efforts should be made to remove colour and unpleasant odour as far as practicable
2.	Odour	IS 3025 (Part5)-1983, RA 2006	-	Agreeable	
3.	Total suspended Solids	2540D APHA 22nd Edn., 2012	mg/L	29	100
4.	pH	IS:3025:(Pt 11):1983 (RA 2006)	-	7.75	6.0-8.5
5.	Temperature	IS 3025 (Pt 9):1983 (RA:2006)	°C	32	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 Part (34):1988	mg/L	5	50
9.	Total Kjeldhal Nitrogen as N	IS: 3025 Part (34):1988	mg/L	31.5	100
10.	Free Ammonia as NH ₃	IS:3025 (Part34):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	24.5	30
12.	COD as O ₂	IS: 3025 Part (58):2006	mg/L	56.0	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 Part (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 (Part49):1994 (RA 2009)	mg/L	BDL (DL 0.1)	5.0

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless as otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 16 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability for loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. Free under scope of accreditation.

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42885555 Fax: 42885500 E-mail: lab@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF ETP EFFLUENT MONITORING

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	16.05.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	16.05.2019
Date of Analysis start & completion	16.05.2019 & 31.05.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.06.2019
Report No	HECS/WW/005/160519

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
18.	Nickel as Ni	IS:3025 (Part 54):2003 (RA 2009)	mg/L	BDL (DL 0.05)	1.0
19.	Fluoride as F ⁻	IS 3025 part (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 22 nd Edition	-	Passed through 850 micron	850 micron
22.	Arsenic as As	IS:3025 (Part 37):1988 (RA 2009)	mg/L	BDL (DL 0.005)	0.2
23.	Mercury as Hg	IS:3025 (Part 48):1994 RA 1999	mg/L	BDL (DL 0.001)	0.01
24.	Cadmium as Cd	IS:3025 (Part 41):1991	mg/L	BDL (DL 0.01)	0.1
25.	Selenium as Se	IS:3025 (Part 56):2003	mg/L	BDL (DL 0.005)	0.05
26.	Cyanide as CN	IS:3025 (Part 27):1986 RA. 2009	mg/L	BDL (DL 0.01)	0.2
27.	Phenolic Compounds as C ₆ H ₅ OH	IS 3025 Part (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	0.1	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 (Part 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 (Part 2):2001	TF	9:1	90% survival of fish after 96 hrs in 100% effluent

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

CONCLUSION: ETP OUTLET EFFLUENT WATER AS ABOVE PARAMETERS ARE WITHIN STANDARDS

End of Report



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 18 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after its issue or prior to issue of test report. 5. The test results relate only to the test items. 6. # not under scope of accreditation.

ANNEXURE-E

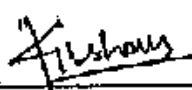
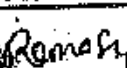
FORM 10

[See rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (Including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/34/2019-20
4.	Transporter's name and address (Including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731585155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA19C1498
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 238 gulnaz.nensey@accellimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	9.190 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	Sender's Certificate	 I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
Name and stamp: Signature: Month Day Year 0 6 0 6 2 0 1 9		
Transporter acknowledgement of receipt of Wastes		
15.	Name and stamp: Signature: Month Day Year	Aabis Trans 0 6 0 6 2 0 1 9
Receiver's certification for receipt of hazardous and other waste		
16.	Name and stamp: Signature: Month Day Year	0 6 0 6 2 0 1 9

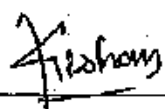
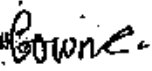
FORM 10
[See rule 19 (1)]
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/31/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574266 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA13A4289
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225. +91 (8476) 202 239 gulnaz.nensey@acclimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	14.140 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	-
14.	 	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
Name and stamp: Signature: Month Day Year 0 6 0 4 2 0 1 9		
15.	Transporter acknowledgement of receipt of Wastes Aabis Trans Signature:  U.No: PCB/132/WMC/H.D. Reg.No.103024/2015-16	Month Day Year 0 6 0 4 2 0 1 9
16.	Receiver's certification for receipt of hazardous and other waste Name and stamp: Signature: Month Day Year 0 6 0 4 2 0 1 9	

FORM 10
[See rule 19 (1)]
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (Including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/30/2019-20
4.	Transporter's name and address (Including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA01AB2500
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@accilimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	14,070 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	 Name and stamp: _____ Signature: <i>[Signature]</i> Month _____ Day _____ Year _____ 0 6 0 4 2 0 1 9	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
15.	Transporter acknowledgement of receipt of Wastes Name and stamp: Aabis Trans _____ Signature: <i>[Signature]</i> Le No: PCB/132/WMC/H.D. Reg.No.103024/2015-16	Month _____ Day _____ Year _____ 0 6 0 4 2 0 1 9
16.	Receiver's certification for receipt of hazardous and other waste Name and stamp: _____ Signature: _____	Month _____ Day _____ Year _____ 0 6 0 4 2 0 1 9

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (Including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.306569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/32/2019-20
4.	Transporter's name and address (Including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA219145
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@acclimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	13.865 MT
12.	Physical form	(Solid/Semicolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	 Name and stamp: _____ Signature:  Month Day Year 0 6 0 4 2 0 1 9	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
15.	Transporter acknowledgement of receipt of Wastes Aabis Trans Signature:  Lie.No.: PCB/132/WMC/H.D. Reg.No.103024/2015-16	Month Day Year 0 6 0 4 2 0 1 9
16.	Receiver's certification for receipt of hazardous and other waste Name and stamp: _____ Signature: _____	Month Day Year 0 6 0 4 2 0 1 9

FORM 10

[See rule 19 (1)]

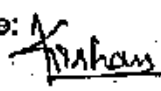
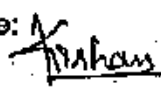
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (Including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2016 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/33/2019-20
4.	Transporter's name and address (Including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574285 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA16A5721
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@acclimited.com
9.	Receiver's authorisation No. :	PCB/26/WMC/HWM/2016/112443 dt:24.08.2016
10.	Waste description:	Spent Clay
11.	Total quantity	14.230MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	-
14.	Sender's Certificate  Name and stamp: _____ Signature: _____ Month Day Year 0 6 0 4 2 0 1 9	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
15.	Transporter acknowledgement of receipt of Wastes Aabis Trans Name and stamp: _____ Signature: _____ Month Day Year 0 6 0 4 2 0 1 9	
16.	Receiver's certification for receipt of hazardous and other waste Name and stamp: _____ Signature: _____ Month Day Year 0 6 0 4 2 0 1 9	

FORM 10

(See rule 19 (1))

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/27/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K., Karnataka 574285 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2016-18 Date- 01.03.2016.
7.	Vehicle registration No.	KA13A4289
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gu/naz.nensey@acclimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	14.830 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	-
14.	 Sender's Certificate I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.	Name and stamp:  Signature:  Month Day Year 0 5 3 1 2 0 1 9
15.	Transporter acknowledgement of receipt of Wastes Name and stamp:  Signature: 	Month Day Year 0 5 3 1 2 0 1 9
16.	Receiver's certification for receipt of hazardous and other waste Name and stamp: Signature: 	Month Day Year 0 5 3 1 2 0 1 9

FORM 10

[See rule 19 (1)]

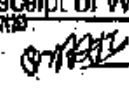
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/29/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2016-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA19C1498
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@acclimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	14.705 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	 Sender's Name and stamp:	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
Name and stamp: Signature: <i>[Signature]</i>		Month Day Year 0 5 3 1 2 0 1 9
15.	Transporter acknowledgement of receipt of Wastes  Name and stamp: Signature: <i>M.B. Yadav</i>	Month Day Year 0 5 3 1 2 0 1 9
16.	Receiver's certification for receipt of hazardous and other waste Name and stamp: Signature:	Month Day Year 0 5 3 1 2 0 1 9

FORM 10

[See rule 19 (1)]

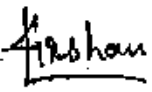
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/28/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA01AB2500
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@accilimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	14.715 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	Sender's Certificate	 I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name and stamp: Signature: <i>Prashant</i>	Month Day Year 0 5 3 1 2 0 1 9
15.	Transporter acknowledgement of receipt of Wastes	 Month Day Year 0 5 3 1 2 0 1 9
16.	Receiver's certification for receipt of hazardous and other waste	Name and stamp: Signature: <i>[Signature]</i> Month Day Year 0 5 3 1 2 0 1 9

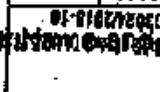
FORM 10

[See rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	: ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	: PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid up to: 30/6/2021
3.	Manifest Document No	: OMPL/HW/019/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	: Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	: (Truck/Tanker/Special Vehicle)
6.	Transporter's registration No.	: PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	: KA01AB2500
8.	Receiver's name and mailing address (including Phone No. and e-mail)	: ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 guinaz.nensey@accilimited.com
9.	Receiver's authorisation No.	: PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	: Spent Clay
11.	Total quantity	: 15.095 MT
12.	Physical form	: (Solid/Semisolid/Sludge/Oily/Tarry/Sturry/Liquid)
13.	Special handling instructions and additional information	:
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name:  Signature: 	Month Day Year 0 5 2 2 2 0 1 9
15.	Transporter acknowledgement of receipt of Wastes	
	Name and stamp:  Signature: 	Month Day Year 0 5 2 2 2 0 1 9
16.	Receiver's certification for receipt of hazardous and other waste	
	Name and stamp: Signature:	Month Day Year 0 5 2 2 2 0 1 9

FORM 10
[See rule 19 (1)]
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2672190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/21/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA21 9145
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@accilimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	13.070 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	Sender's Certificate  Name and stamp: * Signature: <i>Arjun</i>	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations. Month Day Year 0 5 2 2 2 0 1 8
15.	Transporter acknowledgement of receipt of Wastes  Name and stamp: * Signature: <i>Arjun</i>	Month Day Year 0 5 2 2 2 0 1 8
16.	Receiver's certification for receipt of hazardous and other waste Name and stamp: * Signature: <i>Arjun</i>	Month Day Year 0 5 2 2 2 0 1 8

FORM 10
(See rule 19 (1))
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (Including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No.	OMPL/HW/20/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA19C1498
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@acclimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2018
10.	Waste description:	Spent Clay
11.	Total quantity	12.345 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	Sender's Certificate  Name and stamp: <i>Anshu</i> Signature: _____ Month Day Year 0 5 2 2 2 0 1 9	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
15.	Transporter acknowledgement of receipt of Wastes <i>Aabis Trans</i> Signature: <i>B. Yadav</i> Month Day Year 0 5 2 2 2 0 1 9	
16.	Receiver's certification for receipt of hazardous and other waste Name and stamp: _____ Signature: _____ Month Day Year 0 5 2 2 2 0 1 9	

FORM 10

[See rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (Including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/22/2019-20
4.	Transporter's name and address (Including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2016-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA13A4289
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 238 gulnaz.nanseey@acclimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.05.2016
10.	Waste description:	Spent Clay
11.	Total quantity	13.305 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	-
14.	Sender's Certificate <i>Kashay</i> 	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
Name and stamp: Signature: Month Day Year 0 5 2 3 2 0 1 9		
Transporter acknowledgement of receipt of Wastes		
15.	Name and stamp: Signature: Aabis Trans Uc.No. PCB/132/WMC/H.D.Reg.No.103024/2016-16	Month Day Year 0 5 2 3 2 0 1 9
Receiver's certification for receipt of hazardous and other waste		
16.	Name and stamp: Signature:	Month Day Year 0 5 2 3 2 0 1 9

FORM 10

[See rule 19 (1)]

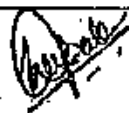
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/23/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bankwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA16A5721
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@accilimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	14.315 MT
12.	Physical form	(Solid/Semi-solid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	Sender's Certificate	 I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name and stamp: Signature: Month Day Year	0 5 2 3 2 0 1 9
15.	Transporter acknowledgement of receipt of Wastes	
	Name and stamp: Signature: Month Day Year	0 5 2 3 2 0 1 9
16.	Receiver's certification for receipt of hazardous and other waste	
	Name and stamp: Signature: Month Day Year	0 5 2 3 2 0 1 9

FORM 10

(See rule 19 (1))

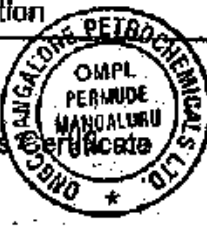
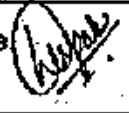
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/25/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aable Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA19C1498
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@accilimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	13.725 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	-
14.	Sender's Certificate	 I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
Name and stamp: Signature: 		Month Day Year 0 5 2 7 2 0 1 9
Transporter's acknowledgement of receipt of Wastes		
15.	Name and stamp: Signature: 	Month Day Year 0 5 2 7 2 0 1 9
Receiver's certification for receipt of hazardous and other waste		
16.	Name and stamp: Signature:	Month Day Year 0 5 2 7 2 0 1 9

FORM 10

[See rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	: ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	: PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	: OMPL/HW/24/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	: Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	: (Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	: PCB/132/WMC/H.D.Reg.No.103024/2016-16 Date- 01.03.2016.
7.	Vehicle registration No.	: KA01AB2500
8.	Receiver's name and mailing address (including Phone No. and e-mail)	: ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 238 gulnaz.nensey@accilimited.com
9.	Receiver's authorisation No. :	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	: 13.450 MT
12.	Physical form	: (Solid/Semisolid/Slu dge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	-
14.	Sender's Certificate	 I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name and stamp: Signature: 	Month Day Year 0 5 2 7 2 0 1 9
15.	Transporter acknowledgement of receipt of Wastes	
	Name and stamp: Signature:  Aabis Trans Lic.No: PCB/132/WMC/H.D. Reg.No.103024/2016-16	Month Day Year 0 5 2 7 2 0 1 9
16.	Receiver's certification for receipt of hazardous and other waste	
	Name and stamp: Signature:	Month Day Year 0 5 2 7 2 0 1 9

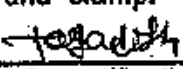
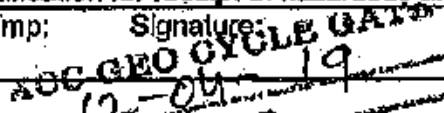
FORM 10

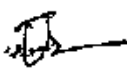
(See rule 19 (1))

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308589 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/26/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-18 Date- 01.03.2016:
7.	Vehicle registration No.	KA13A4289
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (6476) 202 236 gulnaz.nensey@acclimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	14.955 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	-
14.	Sender's Name and stamp:	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations. 
	Signature: 	Month Day Year 0 5 2 7 2 0 1 9
15.	Transporter acknowledgement of receipt of Wastes	
	Signature: 	Month Day Year 0 5 2 7 2 0 1 9
16.	Receiver's certification for receipt of hazardous and other waste	
	Name and stamp: Signature:	Month Day Year 0 5 2 7 2 0 1 9

FORM 10
[See rule 19 (1)]
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (Including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Pernem Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/08/2018-20
4.	Transporter's name and address (Including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-18 Date- 01.03.2016.
7.	Vehicle registration No.	KA16A5721
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	ACC LTD, PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@acclimited.com
9.	Receiver's authorisation No.	PCB/28/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	15.900 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	-
14.	Sender's Certificate	 I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
Name and stamp:  Month: 0 Day: 4 Year: 10		
15. Transporter acknowledgement of receipt of Wastes Name and stamp:  Month: 04 Day: 10 Year: 2019		
16. Receiver's certification for receipt of hazardous and other waste Name and stamp:  Month: 04 Day: 10 Year: 2019		

ACC GEO CYCLE GATE
Date: 12-04-19
S.R. No: 32-80
Time in: 8:23
Time out: 

FORM 10
[See rule 19 (1)]
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190								
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021								
3.	Manifest Document No	OMPL/HW/10/2018-20								
4.	Transporter's name and address (including Phone No. and e-mail)	Aable Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aablitrans@gmail.com								
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)								
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.								
7.	Vehicle registration No.	KA19C1498								
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@acclimited.com								
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016								
10.	Waste description:	Spent Clay								
11.	Total quantity	14.810 MT								
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)								
13.	Special handling instructions and additional information									
14.	Sender's Certificate  Name and stamp: _____ Signature: _____ Month Day Year <table border="1" style="width: 100%; text-align: center;"> <tr> <td>0</td><td>4</td><td>1</td><td>2</td><td>2</td><td>0</td><td>1</td><td>9</td> </tr> </table>		0	4	1	2	2	0	1	9
0	4	1	2	2	0	1	9			
15.	Transporter's acknowledgement of receipt of Wastes Aable Trans Name and stamp: _____ Signature: _____ Month Day Year <table border="1" style="width: 100%; text-align: center;"> <tr> <td>0</td><td>4</td><td>1</td><td>2</td><td>2</td><td>0</td><td>1</td><td>9</td> </tr> </table>		0	4	1	2	2	0	1	9
0	4	1	2	2	0	1	9			
16.	Receiver's certification for receipt of hazardous and other waste Name and stamp: _____ Signature: _____ Month Day Year <table border="1" style="width: 100%; text-align: center;"> <tr> <td>0</td><td>4</td><td>1</td><td>2</td><td>2</td><td>0</td><td>1</td><td>9</td> </tr> </table>		0	4	1	2	2	0	1	9
0	4	1	2	2	0	1	9			

ACC GEO CYCLE GA

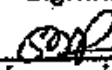
Date: 11/04/2019

S.R. No: 808

Time in: 9:10

Time out: _____

FORM 10
(See rule 19 (1))
MANIFEST FOR HAZARDOUS AND OTHER WASTE

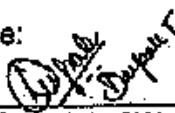
1.	Sender's name and mailing address (Including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid up to: 30/6/2021
3.	Manifest Document No	OMPL/HW/07/2019-20
4.	Transporter's name and address (Including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA01AB2500
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585226 +91 (8476) 202 239 gulnaz.naseey@acclimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	15.930 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
Name and stamp: Signature: 		Month Day Year 0 4 0 8 2 0 1 9
Transporter acknowledgement of receipt of Wastes		
15.	Name and stamp: Signature: 	Month Day Year 0 4 0 8 2 0 1 9
Receiver's certification for receipt of hazardous and other waste		
16.	Name and stamp: Signature:	Month Day Year 0 4 0 8 2 0 1 9

ACC GEO CYCLE GARA
Date: 12/04/19
S.R. No: 1234
Time in: 10:15
Time out: 12:00

FORM 10

[See rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (Including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308589 Dt: 23/11/2018 valid up to: 30/6/2021
3.	Manifest Document No	OMPL/HW/05/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA19CI498
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@acclimited.com
9.	Receiver's authorisation No.	PCB/28/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	14.375 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	-
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name and stamp:  Signature:  Month Day Year 0 4 0 8 2 0 1 9	
15.	Transporter acknowledgement of receipt of Wastes	Month Day Year 0 4 0 8 2 0 1 9
	Receiver's certification for receipt of hazardous and other waste	Month Day Year 0 4 0 8 2 0 1 9

ACC GEO CYCLE G.A.M

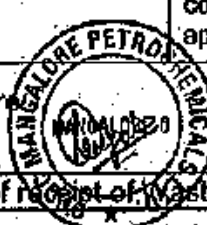
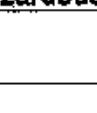
Date: 10/04/19
S.R. No: 9283
Time in: 10:10
Time out: 10:10

[See rule 19 (1)]

1.	Sender's name and mailing address (Including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid up to: 30/6/2021
3.	Manifest Document No	OMPL/HW/06/2019-20
4.	Transporter's name and address (Including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA13A4289
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	AOC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202-238. gulnaz.nanseey@aoclimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	15.790 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name and stamp: Signature: Month: 0 Day: 4 Year: 2019	
15.	Transporter acknowledgement of receipt of Wastes	
	Name and stamp: Signature: Month: 0 Day: 4 Year: 2019	
16.	Receiver's certification for receipt of hazardous and other waste	
	Name and stamp: Signature: Month: 0 Day: 4 Year: 2019	

and stamp: **Signature:**
1000 GEO CYCLE GARA
10-4-88
S.R. No.
10-4-88
10-4-88
10-4-88

FORM 10
[See rule 19 (1)]
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail) :	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190		
2.	Sender's authorisation No. :	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23.11.2018		
3.	Manifest Document No :	OMPL/HW/01/2018-20		
4.	Transporter's name and address (including Phone No. and e-mail) :	Aable Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabletrans@gmail.com		
5.	Type of vehicle :	(Truck/Tanker/Special Vehicle)		
6.	Transporter's registration No :	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.		
7.	Vehicle registration No. :	KA19C1498		
8.	Receiver's name and mailing address (including Phone No. and e-mail) :	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@accilimited.com		
9.	Receiver's authorisation No. :	PCB/26/WMC/HWM/2016/112443 dt:24.08.2016		
10.	Waste description:	Spent Clay		
11.	Total quantity :	14.2 MT		
12.	Physical form :	(Solid/Semi-solid/Sludge/Oily/Tarry/Slurry/Liquid)		
13.	Special handling Instructions and additional information :			
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.		
	Name and stamp: Signature:	 Month Day Year 0 4 0 1 2 0 1 9		
15.	Transporter acknowledgement of receipt of wastes Name and stamp: Signature:	 Month Day Year 0 4 0 1 2 0 1 9		
16.	Receiver's certification for receipt of hazardous and other waste Name and stamp: Signature:	 Month Day Year 0 4 0 1 2 0 1 9		

ACC GEO CYCLE GARA
Date: 2-11-19
S.R. No: 2001
Time in: 09:10
Time out: 02:10

FORM 10

[See rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308568 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/04/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA01AB2500
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensay@accilimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	14.895MT
12.	Physical form	(Solid/Semi-solid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name and stamp: Signature:	Month Day Year 0 4 0 4 2 0 1 9
15.	Transporter acknowledgement of receipt of Wastes	
	Name and stamp: Signature:	Month Day Year 0 4 0 4 2 0 1 9
16.	Receiver's certification for receipt of hazardous and other waste	
	Name and stamp: Signature:	Month Day Year 0 4 0 4 2 0 1 9

ACC GEO CYCLE GALLI
date: 06/04/19
S.R. No. 3167
Time in 11:47
Signature

FORM 10

[See rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/03/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA13A4289
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@accilimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	14.31MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name and stamp: Signature:	Month Day Year 0 4 0 4 2 0 1 9
15.	Transporter acknowledgement of receipt of Wastes	
	Name and stamp: Signature:	Month Day Year 0 4 0 4 2 0 1 9
16.	Receiver's certification for receipt of hazardous and other waste	
	Name and stamp: Signature:	Month Day Year 0 4 0 4 2 0 1 9

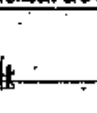
ACC GEO CYCLE GAXA

Date: 06/04/19
S.R. No. 2174
Time in: 12:15
File out:

FORM 10

[See rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

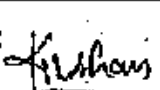
1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/02/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalarnudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016
7.	Vehicle registration No.	KA19C1498
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@acclimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	13.86MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name and stamp: Signature: 	Month Day Year 0 4 0 4 2 0 1 9
15.	Transporter acknowledgement of receipt of Wastes	
	Name and stamp: Signature:  Uc.No.: PCB/132/WMC/H.D. Reg. No.103024/2015-16	Month Day Year 0 4 0 4 2 0 1 9
16.	Receiver's certification for receipt of hazardous and other waste	
	Name and stamp: Signature: 	Month Day Year 0 4 0 4 2 0 1 9

ACC GEO CYCLE UNIT
Date: 26/04/19
S.R. No. 3168
Time in - 11:51
Time out: 11:51

FORM 10

(See rule 19 (1))

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (Including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/15/2019-20
4.	Transporter's name and address (Including Phone No. and e-mail)	Aabls Trans #3-74/A1, Abida Building, Kavalamudoor Village, Baniwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabls@trans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA13A4289
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@accilimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	15.235 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name and stamp:  Signature:  Month Day Year 0 4 1 6 2 0 1 9	
15.	Transporter's acknowledgement of receipt of Wastes	
	Name and stamp:  Signature:  Month Day Year 0 4 1 6 2 0 1 9	
16.	Receiver's certification for receipt of hazardous and other waste	
	Name and stamp: Signature: Month Day Year 0 4 1 6 2 0 1 9	

FORM 10

[See rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

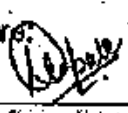
1.	Sender's name and mailing address (Including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872180
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/12/2018-20
4.	Transporter's name and address (Including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574285 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date: 01.03.2016.
7.	Vehicle registration No.	KA01AB2500
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@accilimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	14.785 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	-
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
Name and stamp:  Signature: 		Month Day Year 0 4 1 2 2 0 1 9
Transporter's acknowledgement of receipt of Wastes		
15.	Name and stamp:  Signature: 	Month Day Year 0 4 1 2 2 0 1 9
Receiver's certification for receipt of hazardous and other waste		
16.	Name and stamp: Signature:	Month Day Year 0 4 1 2 2 0 1 9

ACC GEO CYCLE GA 40
Date: 14/04/2019
S.R. No. 2704
Time in 2:30
Time out

FORM 10

[See rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

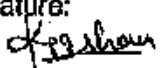
1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/09/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA21 9145
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@acclimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2018/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	15.860 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	Sender's Certificate	 I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
Name and stamp: _____ Signature:  Month _____ Day _____ Year _____ 0 4 1 0 2 0 1 9		
15.	Transporter acknowledgement of receipt of Wastes Aabis Trans U.No: PCB/132/WMC/H.D. Reg.No.103024/2015-16 Date: 04/10/2019	
Receiver's certification for receipt of hazardous and other waste Name and stamp: _____ Signature:  Month _____ Day _____ Year _____ 0 4 1 0 2 0 1 9		

ACC-ORO CYCLE 19
 Date: 12-04-2019
 S.R. No: 3289
 Time in: 8:00
 Time out: _____

FORM 10

[See rule 19 (1)]

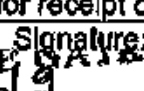
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (Including Phone No. and e-mail)	: ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Pernude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	: PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	: OMPL/HW/16/2019-20
4.	Transporter's name and address (Including Phone No. and e-mail)	: Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	: (Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	: PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	: KA01AB2500
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	: ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585226 +91 (8476) 202 239 gulnaz.nensey@acclimited.com
9.	Receiver's authorisation No.	: PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	: Spent Clay
11.	Total quantity	: 14.080 MT
12.	Physical form	: (Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	Sender's Certificate	ACCEPTED 15-04-2019 Time in: 23:44 Time out: 23:44 I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
Name and stamp:  Signature:  Month: 04 Day: 16 Year: 2019		
Transporter's acknowledgement of receipt of Wastes Name and stamp:  Signature:  Month: 04 Day: 16 Year: 2019		
Receiver's certification for receipt of hazardous and other waste Name and stamp: Signature: Month: 04 Day: 16 Year: 2019		

FORM 10

[See rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/14/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Bantwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA19C1498
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@acclimited.com
9.	Receiver's authorisation No.	PCB/26/WMC/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	10.230 MT
12.	Physical form	(Solid/Semisolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name and stamp:  Signature: <i>Kishan</i>	Month Day Year 0 4 1 6 2 0 1 9
15.	Transporter acknowledgement of receipt of Wastes Name and stamp: <i>Aabis Trans</i>  Signature: <i>[Signature]</i>	Month Day Year 0 4 1 6 2 0 1 9
16.	Receiver's certification for receipt of hazardous and other waste Name and stamp: <i>ACC GEO CYCLE</i>  Signature: <i>[Signature]</i>	Month Day Year 0 4 1 6 2 0 1 9

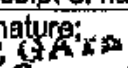
S.R. No. 3377
Time in
Time out

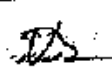
[Signature]

FORM 10

(See rule 19 (1))

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Perumde Village Mangalore - 574 509 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid upto: 30/6/2021
3.	Manifest Document No	OMPL/HW/11/2018-20
4.	Transporter's name and address (including Phone No. and e-mail)	Aabis Trans #3-74/A1, Abida Building, Kavalamudoor Village, Banhwala Taluk, D.K. Karnataka 574265 Ph:9731595155 Email:aabistrans@gmail.com
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/132/WMC/H.D.Reg.No.103024/2015-16 Date- 01.03.2016.
7.	Vehicle registration No.	KA13A4289
8.	Receiver's name and mailing address (including Phone No. and e-mail)	ACC LTD. PO WADI, NEW WADI PLANT DISTRICT GULBARGA (C. RLY) KARNATAKA- 585225 +91 (8476) 202 239 gulnaz.nensey@accilimited.com
9.	Receiver's authorisation No. :	PCB/26/WMG/HWM/2016/112443 dt:24.06.2016
10.	Waste description:	Spent Clay
11.	Total quantity	15.740 MT
12.	Physical form	(Solid/Semicolid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	
14.		I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
Name and stamp: 		Month Day Year 0 4 1 2 2 0 1 9
Transporter acknowledgement of receipt of Wastes		
15.	Name and stamp:  Lic.No.PCB/132/WMC/H.D. Reg.No.103024/2015-16	Month Day Year 0 4 1 2 2 0 1 9
Receiver's certification for receipt of hazardous and other waste		
16.	Name and stamp:  ACC GEO CYCLE GARA	Month Day Year 0 4 1 2 2 0 1 9

Date: 14-04-19
 S.R. No: 33
 Time in: 4:00
 Time out: 2:00




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

ओ एन जी सी मंगलूर पेट्रोकेमिकल्स लिमिटेड

(मंगलूर रिफाइनरी एण्ड पेट्रोकेमिकल्स लिमिटेड की सहायक कंपनी)

ONGC Mangalore Petrochemicals Ltd.

(A Subsidiary of Mangalore Refinery & Petrochemicals Ltd.)

एमएसईजेड परमुदे, मंगलूर - ५७४ ५०९ MSEZ, Perumde, Mangaluru - 574 609.

CIN : U46107KA2006GOI041268 दूरभाष Direct Line: 0824-2872000, फैक्स Fax: 0824-2872006. Website: www.ompl.co.in

REF: OMPL/PCB/HRP/2019-20/

Date: 22/07/2019

To:

The Environmental Officer
Regional Office
KSPCB
Balkampady, Mangalore-11

Mangalore SEZ Ltd. - 4607-
Documents & Contents subject to verification
Received date: 01.08.2019
Received by: [Signature]

Dear Sir,

Sub: Submission of Environmental Monitoring Report for the Month of June, 2019.

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 June, 2019 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. Production Report as Annexure - D

Thanking You,

Ramakantha Prabhu
Chief Manager (EN)

[Signature: Vinay Kumar]
[Signature: Chandra Prasad]
[Signature: J. S. Srinivasan]
21/07/19

CC: Member Secretary, KSPCB, Bangalore
CC: Head (Technical), MSEZ
CC: CEO, OMPL for info
CC: COO, OMPL for info

ANNEXURE - A

Hubert Enviro Care Systems (P) Ltd.

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

I.O.: # 18, 82nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in



Laboratory Services Division

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

AMBIENT AIR QUALITY MONITORING TEST REPORT - JUNE 2019

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premuda 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	06.07.2019
Report No	HECS/AA/001/060719

CONSOLIDATED TEST RESULTS

JUNE '19 - Week		23-Week		24-Week		25-Week		26-Week		Avg. Value
Parameters	NAAQ	03.06.19	06.06.19	10.06.19	13.06.19	17.06.19	20.06.19	24.06.19	27.06.19	
PM _{2.5} (µg/m ³)	60	15.4	13.2	12.5	13.4	14.6	13.5	13.7	14.8	13.89
PM ₁₀ (µg/m ³)	100	38.2	36.5	37.7	35.5	33.7	34.1	37.1	36.2	36.13
SO ₂ (µg/m ³)	80	6.0	5.6	5.8	6.6	5.7	6.5	5.3	5.9	5.93
NO ₂ (µg/m ³)	80	7.3	6.7	7.9	7.1	6.9	6.4	6.2	6.7	6.90
CO (mg/m ³)	2.0	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)	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	0.0	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)	05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacobs and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL = Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron; PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen di-oxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P - Benzo-a-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - 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.

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

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

AMBIENT AIR QUALITY MONITORING TEST REPORT - JUNE 2019

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	Shantigudde
Report Date	06.07.2019
Report No	HECS/AA/002/060719

CONSOLIDATED TEST RESULTS

JUNE '19 - Week		23-Week		24-Week		25-Week		26-Week		Avg. Value
Parameters	NAAQ	03.06.19	06.06.19	10.06.19	13.06.19	17.06.19	20.06.19	24.06.19	27.06.19	
PM _{2.5} (µg/m ³)	60	15.9	14.4	14.3	14.3	13.9	14	15.2	14.5	14.56
PM ₁₀ (µg/m ³)	100	38.7	36.9	35.3	37.3	36.2	36.5	36.1	36.8	36.73
SO ₂ (µg/m ³)	80	5.5	5.7	6.1	5.6	5	6.1	5.4	5.3	5.59
NO ₂ (µg/m ³)	80	6.5	5.8	6.1	5.9	6.1	6.5	7.9	6.2	6.38
CO (mg/m ³)	2.0	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)	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6.0	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)	05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt: 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL = Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron; PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen di-oxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P - Benzo-a-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



[Signature]
Authorized Signatory
(Dr K Ganeshan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.

C-46, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: hro@hecs.in, Website: www.hecs.in

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

AMBIENT AIR QUALITY MONITORING TEST REPORT-JUNE 2019

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	06.07.2019
Report No	HECS/AA/003/060719

JUNE '19 - Week		23-Week		24-Week		25-Week		26-Week		Avg. Value
Parameters	NAAQ	03.06.19	05.06.19	10.06.19	13.06.19	17.06.19	20.06.19	24.06.19	27.06.19	
PM _{2.5} (µg/m ³)	60	17.1	15.2	15.3	16.2	15.3	16.2	16.3	15.4	15.88
PM ₁₀ (µg/m ³)	100	37.5	35.8	35	36.2	34.9	37	36.3	35.6	36.04
SO ₂ (µg/m ³)	80	6.4	6.9	6.9	6.4	6.8	5.9	6.4	6.7	6.55
NO ₂ (µg/m ³)	80	7.8	7.5	7.6	7.4	7.6	7.2	8.1	7.7	7.61
CO (mg/m ³)	2.0	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)	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6.0	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)	05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved West and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt: 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P - Benzo-a-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. This report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless as otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in



Laboratory Services Division

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

AMBIENT AIR QUALITY MONITORING TEST REPORT - JUNE 2019

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	Premude Village
Report Date	06.07.2019
Report No	HECS/AA/004/060719

CONSOLIDATED TEST RESULTS

JUNE '19 - Week		23-Week		24-Week		25-Week		26-Week		Avg. Value
Parameters	NAAQS	03.06.19	06.06.19	10.06.19	13.06.19	17.06.19	20.06.19	24.06.19	27.06.19	
PM _{2.5} (µg/m ³)	60	18.3	16.9	17.2	17.9	17.5	16.2	16.7	16.4	17.14
PM ₁₀ (µg/m ³)	100	37.8	36.8	37.1	36.7	36.2	36.6	35.5	36.5	36.65
SO ₂ (µg/m ³)	80	6.2	6.5	6.1	6	6.2	6	6.2	6.4	6.20
NO ₂ (µg/m ³)	80	7.9	7.7	7.3	7.7	7.1	6.9	7.2	7.5	7.41
CO (mg/m ³)	2.0	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)	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6.0	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)	05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

- PM₁₀ : 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)
- SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
- NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
- O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
- NH₃ : 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)
- C₆H₆ : GC FID/ GC MS based on IS 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
- B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron; PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono-Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P - Benzo-a-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS
****End of Report****



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

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in



Laboratory Services Division

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

AMBIENT AIR QUALITY MONITORING TEST REPORT - JUNE 2019

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	06.07.2019
Report No	HECS/AA/005/060719

CONSOLIDATED TEST RESULTS

JUNE '19 - Week		23-Week		24-Week		25-Week		26-Week		Avg. Value
Parameters	NAAQ	03.06.19	06.06.19	10.06.19	13.06.19	17.06.19	20.06.19	24.06.19	27.06.19	
PM _{2.5} (µg/m ³)	60	17.9	15.9	16.3	15.9	16.5	16.8	15.8	15.7	16.35
PM ₁₀ (µg/m ³)	100	36.8	35.6	34.2	35.5	35.2	35.4	35.6	34.8	35.39
SO ₂ (µg/m ³)	80	5.5	5.2	5.8	6.2	6.6	5.7	6.3	5.7	5.88
NO ₂ (µg/m ³)	80	7	7.2	6.7	7.1	6.9	6.8	6.5	6.9	6.89
CO (mg/m ³)	2.0	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)	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6.0	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)	05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

- PM₁₀ : 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)
- SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
- NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
- O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
- NH₃ : 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)
- C₆H₆ : GC/HID/GC/MS based on IS 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
- B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL = Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P - Benzo - α-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS
*****End of Report*****



Authorized Signatory
Dr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organisation. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances shall accept any liability of loss/damage caused by use or misuse of test report after invalidating or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

ANNEXURE - B

Hubert Enviro Care Systems (P) Ltd.

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

H.O.: # 19, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in



Laboratory Services Division

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF GROUND WATER QUALITY MONITORING

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, Premude
Sample drawn by	HECS
Date of Sampling	08.06.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	08.06.2019
Date of Analysis start & completion	10.06.2019 & 27.06.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	05.07.2019
Report No	HECS/W/001/080619

RESULTS

S.No.	Parametersmonitored	Test method followed	Units	Results	IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	8.12	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	271.5	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	79.79	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	118.25	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	68.9	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	17.59	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	370	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	7.3	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	0.12	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	8.2	45 max
15.	Iron as Fe	IS3025 (Part-53) 2003	mg/L	BDL (DL 0.02)	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS3025 (Part-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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: # 10, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42965555 Fax: 42985500 E-mail: labsales@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF GROUND WATER QUALITY MONITORING

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 Gagnet Labour Colony
Sample drawn by	HECS
Date of Sampling	11.06.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	11.06.2019
Date of Analysis start & completion	12.06.2019 & 27.06.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	06.07.2019
Report No	HECS/W/002/110619

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	8.03	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983		Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984		Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	253.4	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	58.03	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	129.0	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	4.93	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	26.38	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	190	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	6.9	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	4.1	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	BDL (DL 0.02)	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622 1981 (RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622 1981 (RA 2009)	Per 100mL	Absent	Not Detectable

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



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

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF GROUND WATER QUALITY MONITORING

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	11.06.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	11.06.2019
Date of Analysis start & completion	12.06.2019 & 27.06.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	06.07.2019
Report No	HECS/W/003/110619

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	8.00	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	190.05	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	54.4	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	107.5	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	39.4	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	13.19	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	280	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	7.2	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.2	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	0.03	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Note: BDL - Below Detection Limit; DL - Detection Limit; NTU - Nephelometric Turbidity Unit; mg/L - Milligram 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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985555 Fax : 42985500 E-mail : fbsales@hecs.in



Laboratory Services Division

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF GROUND WATER QUALITY MONITORING

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	11.06.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	11.06.2019
Date of Analysis start & completion	12.06.2019 & 27.06.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	06.07.2019
Report No	HECS/W/004/110619

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	6.91	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	117.65	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	29.01	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	53.75	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	34.49	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	18.13	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	190	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	8.1	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.1	45 max
15.	Iron as Fe	IS3025 (Part-53) 2003	mg/L	0.03	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS3025 (Part-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

Notes: 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 ***



Authorized Signatory

(Dr K Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: # 18, 82nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF OPEN WELL WATER QUALITY MONITORING

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premuda Village, Mangalore - 574509
Sample Description	OW1- Open Well Water collected from TenkaEkkar
Sample drawn by	HECS
Date of Sampling	08.06.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	08.06.2019
Date of Analysis start & completion	10.06.2019 & 27.06.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	06.07.2019
Report No	HECS/W/005/080619

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	7.52	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	199.1	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	40.62	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	109.65	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	6.9	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	39.17	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	190	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	6.93	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.2	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	BDL (DL 0.02)	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	<i>Escherichia coli</i>	IS 1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Notes: BDL - Below Detection Limit; D.L - Detection Limit; NTU-Nephelometric Turbidity Unit; mg/L - Milligram 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



Authorized Signatory
[Signature]
Mr K Ganeshan - Lab Manager

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: # 10, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF OPEN WELL WATER QUALITY MONITORING

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premuda Village, Mangalore - 574509
Sample Description	OW2 - Open Well Water collected from Shantigudda Village
Sample drawn by	HECS
Date of Sampling	08.06.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	08.06.2019
Date of Analysis start & completion	10.06.2019 & 27.06.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	06.07.2019
Report No	HECS/W/006/080619

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	7.59	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	199.1	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	72.54	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	150.5	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	12.31	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	4.4	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	230	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	7.2	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.2	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	BDL (DL 0.02)	0.3 max
16.	Hexavalent Chromium - Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100ml	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Note: BDL - Below Detection Limit; DL - 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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in



Certificate No. TC-5786

Laboratory Services Division

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF OPEN WELL WATER QUALITY MONITORING

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 Premude Village
Sample drawn by	HECS
Date of Sampling	08.06.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	08.06.2019
Date of Analysis start & completion	10.06.2019 & 27.06.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	06.07.2019
Report No	HECS/W/007/080619

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	6.53	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	152.04	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	34.82	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	73.1	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	7.9	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	15.83	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	137	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	8.7	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.9	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	BDL (DL 0.02)	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA:2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(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



Authorized Signatory
Dr K Ganesan - Lab Manager

1. This report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invalidating or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: 7/18, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
 ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF SURFACE WATER QUALITY MONITORING

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	17.06.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	17.06.2019
Date of Analysis start & completion	18.06.2019 & 27.06.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	06.07.2019
Report No	HECS/W/008/170619

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	8.02	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	173.76	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	56.58	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	68.8	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	10.84	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	7.92	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	180	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	5.9	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	0.34	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.2	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	0.33	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(R.aff 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(R.aff 2009)	Per 100mL	Absent	Not Detectable

Note: BDL - Below Detection Limit; D.L - Detection Limit; NTU - Nephelometric Turbidity 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



Authorized Signatory
 K Ganeshan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: #18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

**Laboratory Services Division**

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5796

TEST REPORT OF SURFACE WATER QUALITY MONITORING

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	11.06.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	11.06.2019
Date of Analysis start & completion	12.06.2019 & 27.06.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	06.07.2019
Report No	HECS/W/009/110619

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	6.69	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	83.26	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	23.21	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	55.9	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	12.81	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	6.16	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	133	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	6.2	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	4.0	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	0.02	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Note: BDL - Below Detection Limit; DL - 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



Authorized Signatory
K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise monitored. 3. Unless specifically requested by customer, the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss of damage caused by use or misuse of test report after invalidating or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

ANNEXURE - C

Hubert Enviro Care Systems (P) Ltd.

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

H.O.: #10, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in



Laboratory Services Division

Accredited by NABL in the fields of Chemical
ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

NOISE MONITORING TEST REPORT - JUNE 2019

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	03.06.2019
Report Date	06.07.2019
Report No.	HECS/N/001/010719

RESULTS

S.No.	Sampling Location	MoEFCC requirements in dB		Avg. Noise level observed in dB	
		Day	Night	Day	Night
1.	OMPL-North	75	70	62.5	56.1
2.	OMPL-South			63.2	57.9
3.	OMPL-East			61.3	55.0
4.	OMPL-West			64.4	58.6

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 *****



[Signature]
Authorized Signatory
(Dr K Ganesan - Lab Manager)

ANNEXURE - D

ONGC Mangalore Petrochemicals Limited

Production Details for June, 2019
Net Naptha Processed – 27476 MT

Sl. No.	Name of the Product	Quantity, MT
1	Paraxylene (Product)	5300
2	Benzene (Co product)	3073



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

ओ एन जी सी मंगलूर पेट्रोकेमिकल्स लिमिटेड

(मंगलूर रिफाइनरी एण्ड पेट्रोकेमिकल्स लिमिटेड की सहायक कंपनी)

ONGC Mangalore Petrochemicals Ltd.

(A Subsidiary of Mangalore Refinery & Petrochemicals Ltd.)

एमएसईजेड पेम्दे, मंगलूर - ५७४ ५०९ MSEZ, Pernade, Mangaluru - 574 509.

CIN : U40107KA2008GOI041256 दूरभाष Direct Line: 0824-2872000, फैक्स Fax: 0824-2872005 Website: www.ompl.co.in

REF: OMPL/PCB/HRP/2019-20/

Date: 20/08/2019

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

Mangalore SEZ Ltd. - 4760 -
Documents & Contents subject to verification

Received date: 23.08.2019

Received by: V. S. R. S. R.

Dear Sir,

Sub: Submission of Environmental Monitoring Report for the Month of July, 2019.

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 July, 2019 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. Stack Monitoring Analysis Report, Annexure-E
6. SO2 report as Annexure-F
7. Returns Regarding Water Consumed, for the Month of July, 2019, as Annexure-G
8. Production Report as Annexure-H
9. Hazardous waste Manifest as Annexure-I
10. Annual Report under Bio Medical waste Rules, 2016 as Annexure-J

Thanking You,

Ramakantha Prabhu
Chief Manager (EN)

CC: Member Secretary, KSPCB, Bangalore

CC: Head (Technical), MSEZ

CC: CEO, OMPL for Info

CC: COO, OMPL for Info.

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42986555 Fax: 42986500 E-mail: labsales@hecs.in

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

ANNEXURE - A**Laboratory Services Division**

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

AMBIENT AIR QUALITY MONITORING TEST REPORT - JULY 2019

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	08.08.2019
Report No	HECS/AA/001/080819

CONSOLIDATED TEST RESULTS

JULY '19 - Week		27-Week		28-Week		29-Week		30-Week		31-Week	Avg. Value
Parameters	NAAQ	01.07.19	04.07.19	08.07.19	11.07.19	15.07.19	18.07.19	22.07.19	25.07.19	29.07.19	
PM _{2.5} (µg/m ³)	60	13.2	12.8	12.1	13.1	14.3	13.3	13.2	14.5	13.3	13.3
PM ₁₀ (µg/m ³)	100	34.6	35.7	35.3	34.7	32.1	33.8	35.8	35.8	33.4	34.6
SO ₂ (µg/m ³)	80	6.2	5.3	5.7	6.4	5.3	6.3	5.1	5.7	5.3	5.7
NO ₂ (µg/m ³)	80	7.1	7.1	7.3	6.9	6.4	6.1	5.9	6.5	6.1	6.6
CO (mg/m ³)	2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O ₃ (µg/m ³)	100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NH ₃ (µg/m ³)	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb (µg/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:PM₁₀ : 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)SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)NH₃ : 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)

C₆H₆ : GC/FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)

B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene - (DL 1 µg/m³); B(a)P - Benzo - a-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory

Dr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent of HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoice is issued. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 16, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985600 E-mail: labsales@hecs.in

C-45, Industrial Estate, Bakkampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408114, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

AMBIENT AIR QUALITY MONITORING TEST REPORT - JULY 2019

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	08.08.2019
Report No	HECS/AA/002/080819

CONSOLIDATED TEST RESULTS

JULY '19 - Week		27-Week		28-Week		29-Week		30-Week		31-Week	Avg. Value
Parameters	NAAQ	01.07.19	04.07.19	08.07.19	11.07.19	15.07.19	18.07.19	22.07.19	25.07.19	29.07.19	
PM _{2.5} (µg/m ³)	60	15.9	14.4	14.3	14.3	13.9	14	15.2	14.5	13.7	14.5
PM ₁₀ (µg/m ³)	100	38.7	36.9	35.3	37.3	36.2	35.5	36.1	36.8	33.5	35.4
SO ₂ (µg/m ³)	80	5.5	5.7	6.1	5.6	5.0	6.1	5.4	5.3	5.2	5.5
NO ₂ (µg/m ³)	80	6.5	5.8	6.1	5.9	6.1	6.5	7.9	6.2	6.3	6.4
CO (mg/m ³)	2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O ₃ (µg/m ³)	100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NH ₃ (µg/m ³)	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb (µg/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂-Sulphur dioxide; NO₂ - Nitrogen-dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃-Ozone (DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P- Benzo-a-pyrene (DL 0.5 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent of HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. Not end scope of accreditation.

HEC9/JQ/FMT/J50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd 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 - 2408114, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

AMBIENT AIR QUALITY MONITORING TEST REPORT-JULY 2019

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	08.08.2019
Report No	HECS/AA/003/080819

JULY '19 - Week		27-Week		28-Week		29-Week		30-Week		31-Week	Avg. Value
Parameters	NAAQ	01.07.19	04.07.19	08.07.19	11.07.19	15.07.19	18.07.19	22.07.19	25.07.19	29.07.19	
PM _{2.5} (µg/m ³)	60	17.1	15.2	15.3	16.2	15.3	16.2	16.3	15.4	15.3	15.8
PM ₁₀ (µg/m ³)	100	37.5	35.8	35.0	36.2	34.9	37.0	36.3	35.6	34.3	35.8
SO ₂ (µg/m ³)	80	6.4	6.9	6.9	6.4	6.8	5.9	6.4	6.7	6.1	6.5
NO ₂ (µg/m ³)	80	7.8	7.5	7.6	7.4	7.6	7.2	8.1	7.7	7.2	7.6
CO (mg/m ³)	2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O ₃ (µg/m ³)	100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NH ₃ (µg/m ³)	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb (µg/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P - Benzo-α-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory
Dr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent of HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by us or misuse of test report after invoking or issue of test report. 5. The test results are related only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/80

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 - 576011.
Ph: 0824 - 2409111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & OHSA3 18001 Certified.

AMBIENT AIR QUALITY MONITORING TEST REPORT - JULY 2019

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	Premude Village
Report Date	08.08.2019
Report No	HECS/AA/004/080819

CONSOLIDATED TEST RESULTS

JULY '19 - Week		27-Week		28-Week		29-Week		30-Week		31-Week	Avg. Value
Parameters	NAAQS	01.07.19	04.07.19	08.07.19	11.07.19	15.07.19	18.07.19	22.07.19	25.07.19	29.07.19	
PM _{2.5} (µg/m ³)	60	18.3	16.9	17.2	17.9	17.5	16.2	16.7	15.4	17.7	17.2
PM ₁₀ (µg/m ³)	100	37.8	36.8	37.1	36.7	36.2	36.6	35.5	35.5	34.9	36.5
SO ₂ (µg/m ³)	80	6.2	6.5	6.1	6.0	6.2	6.0	6.2	6.4	6.3	6.2
NO ₂ (µg/m ³)	80	7.9	7.7	7.3	7.7	7.1	6.9	7.2	7.5	7.6	7.4
CO (mg/m ³)	2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O ₃ (µg/m ³)	100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NH ₃ (µg/m ³)	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb (µg/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P - Benzo-α-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

****End of Report****



Authorized Signatory
Dr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organisation. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 10 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability for loss/damage caused by use or misuse of test report after invalidation or loss of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/750

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: krc@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

AMBIENT AIR QUALITY MONITORING TEST REPORT - JULY 2019

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	08.08.2019
Report No	HECS/AA/005/080819

CONSOLIDATED TEST RESULTS

JULY '19 - Week		27-Week		28-Week		29-Week		30-Week		31-Week	Avg. Value
Parameters	NAAQ	01.07.19	04.07.19	08.07.19	11.07.19	15.07.19	18.07.19	22.07.19	25.07.19	29.07.19	
PM _{2.5} (µg/m ³)	60	17.9	15.9	16.3	15.9	16.5	16.8	15.8	15.7	15.8	16.3
PM ₁₀ (µg/m ³)	100	36.8	35.6	34.2	35.5	35.2	35.4	35.6	34.8	35.9	35.4
SO ₂ (µg/m ³)	80	5.5	5.2	5.8	6.2	6.6	5.7	6.3	5.7	5.4	5.8
NO _x (µg/m ³)	80	7.0	7.2	6.7	7.1	6.9	6.8	6.5	6.9	7.5	7.0
CO (mg/m ³)	2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O ₃ (µg/m ³)	100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NH ₃ (µg/m ³)	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb (µg/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO_x : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO_x - Nitrogen-dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P - Benzo - α - pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory

(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent of HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test reports after invoking or issue of test report. 5. The test results relate only to the test items. 6. It is not under scope of accreditation.

HECS/Q/FMT/180

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 - 2440111, Email: kro@hecs.in, Website: www.hecs.in

ANNEXURE-B



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF GROUND WATER QUALITY MONITORING

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, Premude
Sample drawn by	HECS
Date of Sampling	15.07.2019
Qty. of sample received	2 L In HDPE Can + 100 sterile container
Date of sample received	15.07.2019
Date of Analysis start & completion	15.07.2019 & 31.07.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.08.2019
Report No	HECS/W/001/150719

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	7.73	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	48.1	500 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	17.76	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	38.43	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	15.76	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	BDL (DL 2)	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	110	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	BDL (DL 5)	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	0.09	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	7.3	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	0.19	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(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



[Signature]

Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 18 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoking or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: lab@hecs.in

C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2409111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF GROUND WATER QUALITY MONITORING

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	15.07.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	15.07.2019
Date of Analysis start & completion	15.07.2019 & 31.07.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.08.2019
Report No	HECS/W/002/150719

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	7.85	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	53.65	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	16.31	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	40.5	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	16.75	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	3.15	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	116	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	6.9	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.8	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	BDL (DL 0.02)	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622 1981 (RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622 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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances shall accept any liability for loss or damage caused by use or misuse of test report or her involving any issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 093.

Ph: 42985555 Fax: 42985500 E-mail: lab@hecs.in

C-46, Industrial Estate, Balkampady, Mangalore, Karnataka - 576011.

Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF GROUND WATER QUALITY MONITORING

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	15.07.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	15.07.2019
Date of Analysis start & completion	15.07.2019 & 31.07.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.08.2019
Report No	HECS/W/003/150719

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	7.85	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	46.25	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	38.9	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	40.6	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	14.8	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	BDL (DL 2)	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	117	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	7.44	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.4	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	0.04	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	<i>Escherichia coli</i>	IS 1622:1981(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



Authorized Signatory

(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after involving or issue of test report. 5. That test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: lab@hecs.in

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 576011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF GROUND WATER QUALITY MONITORING

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	18.07.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	18.07.2019
Date of Analysis start & completion	18.07.2019 & 31.07.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.08.2019
Report No	HECS/W/004/180719

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	6.57	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	64.75	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	12.6	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	42.7	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	31.5	1000 max
10.	Magnesium as Mg	IS 3025 (Part-45) 1994	mg/L	8.1	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	160	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	7.73	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.3	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	0.02	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoking or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/150

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 16, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985555 Fax: 42985544 E-mail: labsales@hecs.in

C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2406111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5788

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF OPEN WELL WATER QUALITY MONITORING

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (QMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore - 574509
Sample Description	DW1- Open Well Water collected from TankaEkkar
Sample drawn by	HECS
Date of Sampling	15.07.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	15.07.2019
Date of Analysis start & completion	16.07.2019 & 31.07.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.08.2019
Report No	HECS/W/005/150719

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	6.75	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	33.3	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	8.9	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	34.16	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	21.7	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	2.7	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	113	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	7.0	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.5	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	BDL (DL 0.02)	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	<i>Escherichia coli</i>	IS 1622:1981(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



Authorized Signatory
Dr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mandated. 3. Unless specifically requested by customer the test items will not be retained more than 16 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after receiving or issue of test report. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42885555 Fax : 42885500 E-mail : lab@hecs.in

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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF OPEN WELL WATER QUALITY MONITORING

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	15.07.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	15.07.2019
Date of Analysis start & completion	15.07.2019 & 31.07.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.08.2019
Report No	HECS/W/006/150719

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	7.24	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	48.1	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	17.8	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	55.5	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	17.7	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	BDL (DL 2)	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	126	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	BDL (DL 5)	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.5	45 max
15.	Iron as Fe	IS3025 (Part-53) 2003	mg/L	0.10	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS1522:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Notes: 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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/PMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985600 E-mail: labsales@hecs.in

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



Certificate No. TC-5788

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF OPEN WELL WATER QUALITY MONITORING

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 Premude Village
Sample drawn by	HECS
Date of Sampling	15.07.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	15.07.2019
Date of Analysis start & completion	16.07.2019 & 31.07.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	03.08.2019
Report No	HECS/W/007/150719

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	7.85	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	50	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	14.8	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	40.6	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	14.8	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	3.15	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	116	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	8.3	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.5	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	BDL (DL 0.02)	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coliform Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability for loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

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 OF SURFACE WATER QUALITY MONITORING

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	15.07.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	15.07.2019
Date of Analysis start & completion	16.07.2019 & 31.07.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.08.2019
Report No	HECS/W/008/150719

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	6.55	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	37	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	10.4	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	25.6	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	27.6	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	2.7	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	137	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	5.75	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	0.3	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	3.6	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	0.24	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-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-Nephelometric Turbidity 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



Authorized Signatory

(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances job accepts any liability or loss/damage caused by use or misuse of test report after invalidation of test report. 5. The test results are valid only for the test items. 6. Not under scope of accreditation.

HECS/G/FMT/60

Hubert Enviro Care Systems (P) Ltd.

H.Q.: # 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 - 2448111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF SURFACE WATER QUALITY MONITORING

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	15.07.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	15.07.2019
Date of Analysis start & completion	16.07.2019 & 31.07.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.08.2019
Report No	HECS/W/009/150719

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	As per IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Part-11) 1983	-	6.80	6.5-8.5
2.	Colour	IS 3025 (Part-4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Part-10) 1984	NTU	BDL (DL 0.1)	5 max
4.	Odour	IS 3025 (Part-5) 1983	-	Agreeable	Agreeable
5.	Taste	IS 3025 (Part-8) 1984	-	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (Part-21) 1983	mg/L	35.2	600 max
7.	Calcium as Ca	IS 3025 (Part-40) 1991	mg/L	9.6	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Part-23) 1986	mg/L	21.4	200 max
9.	Chloride as Cl	IS 3025 (Part-32) 1988	mg/L	21.7	1000 max
10.	Magnesium as Mg	IS 3025 (Part-46) 1994	mg/L	2.7	100 max
11.	Total Dissolved Solids	IS 3025 (Part-16) 1984	mg/L	116	2000 max
12.	Sulphate as SO ₄	IS 3025 (Part-24) 1986	mg/L	6.5	400 max
13.	Fluoride	IS 3025 (Part-60) 2008	mg/L	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Part-31) 1978	mg/L	4.3	45 max
15.	Iron as Fe	IS 3025 (Part-53) 2003	mg/L	0.03	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Part-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(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

Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability for loss/damage caused by use or misuse of test report after its issue or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/IQ/FMT/50

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 - 2409111, Email: kro@hecs.in, Website: www.hecs.in

ANNEXURE - C



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

NOISE MONITORING TEST REPORT - JULY 2019

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	01.07.2019
Report Date	03.08.2019
Report No.	HECS/N/001/030819

RESULTS

S.No.	Sampling Location	MoEFCC requirements in dB		Avg. Noise level observed in dB	
		Day	Night	Day	Night
1.	OMPL-North	75	70	61.8	55.7
2.	OMPL-South			62.5	56.3
3.	OMPL-East			60.4	54.7
4.	OMPL-West			63.6	57.6

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 *****



Authorized Signatory
(Dr K Ganesan - Lab Manager)

ANNEXURE - D

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 093.

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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF ETP EFFLUENT MONITORING

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	11.07.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	11.07.2019
Date of Analysis start & completion	12.07.2019 & 31.07.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	03.08.2019
Report No	HECS/WW/002/110719

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
1.	Color	IS:3025:(Pt 4):1983(RA 2006)	Hazen Units	Colourless	All efforts should be made to remove colour and unpleasant odour as far as practicable
2.	Odour	IS 3025 (Part 5)-1983, RA 2006	-	Agreeable	
3.	Total Suspended Solids	2540D APHA 22nd Edn., 2012	mg/L	14	100
4.	pH	IS:3025:(Pt 11):1983(RA 2006)	-	6.16	6.0-8.5
5.	Temperature	IS 3025 (Pt 9):1983(RA:2006)	°C	30	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 (Pt 26):1986(RA 2009)	mg/L	BDL (DL 0.1)	1
8.	Ammonical Nitrogen as N	IS 3025 Part (34):1988	mg/L	6.4	50
9.	Total Kjeldhal Nitrogen as N	IS 3025 Part (34):1988	mg/L	30.2	100
10.	Free Ammonia as NH ₃	IS:3025 (Part 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	23.0	30
12.	COD as O ₂	IS 3025 Part (58):2006	mg/L	69.0	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 Part (52):2003	mg/L	BDL (DL 0.01)	0.1
15.	Total Chromium as Cr	IS 3025 (Pt 52):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 (Part 49):1994(RA 2009)	mg/L	BDL (DL 0.1)	5.0



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing/issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd 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 & OHSAAS 18001 Certified.

Certificate No. TC-5786

TEST REPORT OF ETP EFFLUENT MONITORING

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premuda Village, Mangalore - 574509
Sample Description	Guard Pond Pump Discharge (ETP Effluent)
Sample drawn by	HECS
Date of Sampling	11.07.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	11.07.2019
Date of Analysis start & completion	12.07.2019 & 31.07.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	03.08.2019
Report No	HECS/WW/002/110719

RESULTS

S.No.	Parameters Monitored	Test method followed	Units	Results	Permissible Limit
18.	Nickel as Ni	IS:3025 (Part54):2003 (RA 2009)	mg/L	BDL (DL 0.05)	1.0
19.	Fluoride as F-	IS 3025 part (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 22nd Edition		Passed through 850 micron	850 micron
22.	Arsenic as As	IS:3025 (Part37):1988(RA 2009)	mg/L	BDL (DL 0.005)	0.2
23.	Mercury as Hg	IS:3025 (Part48):1994 RA 1999	mg/L	BDL (DL 0.001)	0.01
24.	Cadmium as Cd	IS:3025 (Part41):1991	mg/L	BDL (DL 0.01)	0.1
25.	Selenium as Se	IS:3025 (Part56):2003	mg/L	BDL (DL 0.005)	0.05
26.	Cyanide as CN	IS:3025 (Part27):1986 RA. 2009	mg/L	BDL (DL 0.01)	0.2
27.	Phenols as C ₆ H ₅ OH	IS 3025 Part (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	0.06	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 (Part56):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(Part 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 EFFLUENT WATER AS ABOVE PARAMETERS ARE WITHIN STANDARDS

End of Report



Authorized Signatory

K. K. Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent of HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issuance of test report. 4. Under no circumstances lab accepts any liability or loss of damage caused by use or misuse of test report after involving or issue of test report. 5. The test results are only for the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/180

Hubert Enviro Care Systems (P) Ltd.

H.O.: #18, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42965555 Fax: 42965500 E-mail: lab@hcs.in

C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2408111, Email: kro@hcs.in, Website: www.hcs.in

**Laboratory Services Division**

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5788

TEST REPORT OF ETP EFFLUENT MONITORING

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	29.07.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	29.07.2019
Date of Analysis start & completion	29.07.2019 & 05.08.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	06.08.2019
Report No	HECS/WW/005/290719

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
1.	Color	IS:3025:(Pt 4):1983(RA 2006)	Hazen Units	Colourless	All efforts should be made to remove colour and unpleasant odour as far as practicable
2.	Odour	IS 3025 (Part 5)-1983, RA 2006	-	Agreeable	
3.	Total Suspended Solids	2540D APHA 22nd Edn., 2012	mg/L	12	100
4.	pH	IS:3025:(Pt 11):1983(RA 2006)	-	6.21	6.0-8.5
5.	Temperature	IS 3025 (Pt 9):1983(RA:2006)	°C	31	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 (Pt 26):1986(RA 2009)	mg/L	BDL (DL 0.1)	1
8.	Ammonical Nitrogen as N	IS 3025 Part (34):1988	mg/L	6.1	50
9.	Total Kjeldhal Nitrogen as N	IS 3025 Part (34):1988	mg/L	29.5	100
10.	Free Ammonia as NH ₃	IS:3025 (Part 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	26.0	30
12.	COD as O ₂	IS 3025 Part (58):2006	mg/L	78.0	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 Part (52):2003	mg/L	BDL (DL 0.01)	0.1
15.	Total Chromium as Cr	IS 3025(Pt 52):2003 (RA 2009)	mg/L	BDL (DL 0.01)	2.0
16.	Copper as Cu	IS:3025:(Pt 42):1992(RA 2009)	mg/L	BDL (DL 0.05)	1.0
17.	Zinc as Zn	IS:3025 (Part 49):1994(RA 2009)	mg/L	BDL (DL 0.1)	5.0



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organisation. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoking or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/80

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985555 Fax : 42985600 E-mail : lab@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 OF ETP EFFLUENT MONITORING

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	29.07.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	29.07.2019
Date of Analysis start & completion	29.07.2019 & 05.08.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	09.08.2019
Report No	HECS/WW/005/290719

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
18.	Nickel as Ni	IS:3025 (Part54):2003 (RA 2009)	mg/L	BDL (DL 0.05)	1.0
19.	Fluoride as F-	IS 3025 part (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 22nd Edition	-	Passed through 850 micron	850 micron
22.	Arsenic as As	IS:3025 (Part37):1988(RA 2009)	mg/L	BDL (DL 0.005)	0.2
23.	Mercury as Hg	IS:3025 (Part48):1994 RA 1999	mg/L	BDL (DL 0.001)	0.01
24.	Cadmium as Cd	IS:3025 (Part41):1991	mg/L	BDL (DL 0.01)	0.1
25.	Selenium as Se	IS:3025 (Part56):2003	mg/L	BDL (DL 0.005)	0.05
26.	Cyanide as CN	IS:3025 (Part27):1986 RA. 2009	mg/L	BDL (DL 0.01)	0.2
27.	Phenols as C ₆ H ₅ OH	IS 3025 Part (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	0.1	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 (Part56):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(Part 2):2001	Tf	9:1	90% survival of fish after 96 hrs in 100% effluent

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

CONCLUSION: ETP OUTLET EFFLUENT WATER AS ABOVE PARAMETERS ARE WITHIN STANDARDS

End of Report



Authorized Signatory

K Ganesan - Lab Manager)

1. This report in full or part shall not be used for any promotional or publicity purpose without written consent by HECs. 2. Samples are not drawn by HECs unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 18 days from the date of test report. 4. Under no circumstances a lab accepts a liability or loss/damage caused by use or misuse of test report after invoking or misuse of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMTA

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42986555 Fax: 42985500 E-mail: labsales@hecs.in

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 576011.

Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in

ANNEXURE-E**Laboratory Services Division**

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

Certificate No. TC-5786

EMISSION AIR FROM STACK/ CHIMNEY MONITORING TEST REPORT OF JULY 2019

Page No. 1 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Perumde Village, Mangalore-574509, Karnataka, India.
Stack ID	NHT Charge Heater
Sample Description	Manual Stack Emission Monitoring
Sampling Date	31.07.2019
Sample Receipt	01.08.2019
Date of Analysis start & completion	01.08.2019 & 05.08.2019
Equipment Used	Vayubodhan VSS1
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	06.08.2019
Report No	HECS-OMPL/SEM/001/310719

General Details	
Ambient Temperature (°C)	28
Stack Diameter (m)	1.96
Stack Height (m)	65
Stack Temperature (°C)	232
Flue Gas Velocity (m/s)	7
Flue gas flow rate (Nm ³ /hr)	54356.1

Parameter monitored	Protocol	Results (mg/Nm ³)	Standard Norms (mg/Nm ³)
SPM	IS 11255 (Part 1)-1985	3.9	5
Sulphur Dioxide (SO ₂)	IS 11255 (Part 3)-1985	42.89	50
Oxides of Nitrogen (NO _x)	IS 11255 (Part 7)-2005	71	250
Carbon monoxide (CO)	IS 5182 (Part 10)-1999	BDL (DL 1)	100

Note: mg/Nm³: milligram per normal cubic meter; SPM: Suspended Particulate Matter;
m/s - Meter per second; Nm³/hr - Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS



(Dr K GANESAN)
Authorized Signatory

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 093.
 Ph: 42985555 Fax : 42985600 E-mail : labsales@hecs.in

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 576011.
 Ph: 0824 - 2406111, 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

EMISSION AIR FROM STACK/ CHIMNEY MONITORING TEST REPORT OF JULY 2019

Page No. 2 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Permude Village, Mangalore-574509, Karnataka, India.
Stack ID	Isomer Charge Heater
Sample Description	Manual Stack Emission Monitoring
Sampling Date	30.07.2019
Sample Receipt	31.07.2019
Date of Analysis start & completion	31.07.2019 & 04.08.2019
Equipment Used	Vayubodhan VSS1
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	06.08.2019
Report No	HECS-OMPL/SEM/002/300719

General Details	
Ambient Temperature (°C)	27
Stack Diameter (m)	2.4
Stack Height (m)	66
Stack Temperature (°C)	164
Flue Gas Velocity (m/s)	3.1
Flue gas flow rate (Nm ³ /hr)	39953.5

Parameter monitored	Protocol	Results(mg/Nm ³)	Standard Norms(mg/Nm ³)
SPM	IS 11255(Part 1)-1985	3.4	5
Sulphur Dioxide(SO ₂)	IS 11255(Part 3)-1985	25.04	50
Oxides of Nitrogen (NO _x)	IS 11255(Part 7)-2005	181	250
Carbon monoxide (CO)	IS 5182(Part 10)-1999	BDL (DL 1)	100

Note: mg/Nm³: milligram per normal cubic meter; SPM: Suspended Particulate Matter;
 m/s – Meter per second; Nm³/hr – Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS



(Dr K GANESAN)
 Authorized Signatory

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability for loss/damage caused by use or misuse of test report after involving or misuse of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/80

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42986555 Fax: 42985500 E-mail: labsales@hecs.in

C-46, Industrial Estate, Balkempady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2406111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5788

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSA 18001 Certified.

EMISSION AIR FROM STACK/ CHIMNEY MONITORING TEST REPORT OF JULY 2019

Page No. 3 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Permude Village, Mangalore-574509, Karnataka, India.
Stack ID	CPP (GTG-HRSG) - 1
Sample Description	Manual Stack Emission Monitoring
Sampling Date	01.08.2019
Sample Receipt	02.08.2019
Date of Analysis start & completion	02.08.2019 & 07.08.2019
Equipment Used	Vayubodhan V551
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.08.2019
Report No	HECS-OMPL/SEM/003/010819

General Details

Ambient Temperature (°C)	30
Stack Diameter (m)	2.9
Stack Height (m)	70
Stack Temperature (°C)	182
Flue Gas Velocity (m/s)	4.15
Flue gas flow rate (Nm ³ /hr)	19137.4

Parameter monitored	Protocol	Results(mg/Nm ³)	Standard Norms(mg/Nm ³)
SPM	IS 11255(Part 1)-1985	18.1	50
Sulphur Dioxide(SO ₂)	IS 11255(Part 3)-1985	145.11	850
Oxides of Nitrogen(NO _x)	IS 11255(Part 7)-2005	208	350
Carbon monoxide (CO)	IS 5182(Part 10)-1999	BDL (DL 1)	150

Note: mg/Nm³: milligram per normal cubic meter; SPM: Suspended Particulate Matter;
m/s - Meter per second; Nm³/hr - Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS



(Dr K GANESAN)
Authorized Signatory

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 10, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42986555 Fax: 42986500 E-mail: lab@hcs.in

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



Certificate No. TC-5788

Laboratory Services Division

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

EMISSION AIR FROM STACK/ CHIMNEY MONITORING TEST REPORT OF JULY 2019

Page No. 4 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Perumde Village, Mangalore-574509, Karnataka, India.
Stack ID	Plat former Unit Charge Heater
Sample Description	Manual Stack Emission Monitoring
Sampling Date	31.07.2019
Sample Receipt	01.08.2019
Date of Analysis start & completion	01.08.2019 & 07.08.2019
Equipment Used	Vayubodhan VSS1
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.08.2019
Report No	HECS-OMPL/SEM/004/310719

General Details	
Ambient Temperature (°C)	28
Stack Diameter (m)	4.2
Stack Height (m)	95
Stack Temperature (°C)	181
Flue Gas Velocity (m/s)	5.2
Flue gas flow rate (Nm ³ /hr)	180254.2

Parameter monitored	Protocol	Results(mg/Nm ³)	Standard Norms(mg/Nm ³)
SPM	IS 11255(Part 1)-1985	3.4	5
Sulphur Dioxide (SO ₂)	IS 11255(Part 3)-1985	35.39	50
Oxides of Nitrogen(NO _x)	IS 11255(Part 7)-2005	125	250
Carbon monoxide (CO)	IS 5182(Part 10)-1999	BDL (DL 1)	100

Note: mg/Nm³: milligram per normal cubic meter; SPM: Suspended Particulate Matter;
m/s -- Meter per second; Nm³/hr -- Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS,



[Signature]
(Dr K GANESAN)
Authorized Signatory

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42865555 Fax: 42865500 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

EMISSION AIR FROM STACK/ CHIMNEY MONITORING TEST REPORT OF JULY 2019

Page No. 5 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Permude Village, Mangalore-574509, Karnataka, India.
Stack ID	Tatory Charge Heater
Sample Description	Manual Stack Emission Monitoring.
Sampling Date	01.08.2019
Sample Receipt	02.08.2019
Date of Analysis start & completion	02.08.2019 & 08.08.2019
Equipment Used	Vayubodhan V551
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.08.2019
Report No	HECS-OMPL/SEM/005/010819

General Details	
Ambient Temperature (°C)	29
Stack Diameter (m)	1.75
Stack Height (m)	65
Stack Temperature (°C)	164
Flue Gas Velocity (m/s)	3
Flue gas flow rate (Nm ³ /hr)	31152.6

Parameter monitored	Protocol	Results (mg/Nm ³)	Standard Norms (mg/Nm ³)
SPM	IS 11255(Part 1)-1985	3.2	5
Sulphur Dioxide(SO ₂)	IS 11255(Part 3)-1985	19.01	50
Oxides of Nitrogen(NO _x)	IS 11255(Part 7)-2005	191	250
Carbon monoxide (CO)	IS 5182(Part 10)-1999	BDL (DL 1)	100

Note: mg/Nm³: milligram per normal cubic meter; SPM: Suspended Particulate Matter;
m/s - Meter per second; Nm³/hr - Normal cubic meter per hour

INFERENCE: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS



(Dr K GANESAN)
Authorized Signatory

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances the acceptance of liability or loss/damage caused by use or misuse of test report after receiving the issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/60

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

EMISSION AIR FROM STACK/ CHIMNEY MONITORING TEST REPORT OF JULY 2019

Page No. 6 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Permude Village, Mangalore-574509, Karnataka, India.
Stack ID	Xylene Column Reboiler Heater (Part A)
Sample Description	Manual Stack Emission Monitoring
Sampling Date	29.07.2019
Sample Receipt	30.07.2019
Date of Analysis start & completion	30.07.2019 & 05.08.2019
Equipment Used	Vayubodhan VSS1
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	08.08.2019
Report No	HECS-OMPL/SEM/006/290719

General Details	
Ambient Temperature (°C)	27
Stack Diameter (m)	3.69
Stack Height (m)	98
Stack Temperature (°C)	192
Flue Gas Velocity (m/s)	3
Flue gas flow rate (Nm ³ /hr)	146671.8

Parameter monitored	Protocol	Results (mg/Nm ³)	Standard Norms (mg/Nm ³)
SPM	IS 11255 (Part 1)-1985	4.3	50
Sulphur Dioxide(SO ₂)	IS 11255 (Part 3)-1985	18.10	850
Oxides of Nitrogen(NO _x)	IS 11255 (Part 7)-2005	58	350
Carbon monoxide (CO)	IS 5182 (Part 10)-1999	BDL (DL 1)	150

Note: mg/Nm³: milligram per normal cubic meter; SPM: Suspended Particulate Matter;
m/s – Meter per second; Nm³/hr – Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS



(Signature)
(Dr K GANESAN)
Authorized Signatory

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after involving or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985565 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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

EMISSION AIR FROM STACK/ CHIMNEY MONITORING TEST REPORT OF JULY 2019

Page No. 7 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Perumde Village, Mangalore-574509, Karnataka, India.
Stack ID	Xylene Column Reboiler Heater (Part B)
Sample Description	Manual Stack Emission Monitoring
Sampling Date	29.07.2019
Sample Receipt	30.07.2019
Date of Analysis start & completion	30.07.2019 & 05.08.2019
Equipment Used	Vayubodhan VSS1
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	06.08.2019
Report No	HECS-OMPL/SEM/007/290719

General Details	
Ambient Temperature (°C)	27
Stack Diameter (m)	3.69
Stack Height (m)	98
Stack Temperature (°C)	185
Flue Gas Velocity (m/s)	3.2
Flue gas flow rate (Nm ³ /hr)	148613.5

Parameter monitored	Protocol	Results (mg/Nm ³)	Standard Norms (mg/Nm ³)
SPM	IS 11255 (Part 1)-1985	5.2	50
Sulphur Dioxide (SO ₂)	IS 11255 (Part 3)-1985	17.70	850
Oxides of Nitrogen (NO _x)	IS 11255 (Part 7)-2005	53	350
Carbon monoxide (CO)	IS 5182 (Part 10)-1999	BDL (DL 1)	150

Note: mg/Nm³: milligram per normal cubic meter; SPM: Suspended Particulate Matter;
m/s – Meter per second; Nm³/hr – Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS



(Dr K GANESAN)

Authorized Signatory

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability for loss/damage caused by use or misuse of test report after invoking or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/PMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42986555 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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

EMISSION AIR FROM STACK/ CHIMNEY MONITORING TEST REPORT OF JULY 2019

Page No. 8 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Permude Village, Mangalore-574509, Karnataka, India.
Stack ID	BTF (Toluene Column Reboiler Heater)
Sample Description	Manual Stack Emission Monitoring
Sampling Date	30.07.2019
Sample Receipt	31.07.2019
Date of Analysis start & completion	31.07.2019 & 06.08.2019
Equipment Used	Vayubodhan VSS1
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	06.08.2019
Report No	HECS-OMPL/SEM/008/300719

General Details	
Ambient Temperature (°C)	27
Stack Diameter (m)	3.29
Stack Height (m)	80
Stack Temperature (°C)	190
Flue Gas Velocity (m/s)	3.2
Flue gas flow rate (Nm ³ /hr)	89518.7

Parameter monitored	Protocol	Results (mg/Nm ³)	Standard Norms (mg/Nm ³)
SPM	IS 11255(Part 1)-1985	3.8	50
Sulphur Dioxide(SO ₂)	IS 11255(Part 3)-1985	11.34	850
Oxides of Nitrogen(NO _x)	IS 11255(Part 7)-2005	39	350
Carbon monoxide (CO)	IS 5182(Part 10)-1999	BDL (DL 1)	150

Note: mg/Nm³: milligram per normal cubic meter; SPM: Suspended Particulate Matter;
m/s - Meter per second; Nm³/hr - Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS



(Dr K GANESAN)

Authorized Signatory

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be released more than 15 days from the date of issue of test report. 4. Under no circumstances shall accept any liability or loss/damage caused by use or misuse of test report after involving or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd Street, Ashok Nagar, Chennai - 600 063.

Ph: 42065555 Fax: 42065500 E-mail: labsales@hecs.in

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011,

Ph: 0824 - 2406111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

EMISSION AIR FROM STACK/ CHIMNEY MONITORING TEST REPORT OF JULY 2019

Page No. 9 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Permude Village, Mangalore-574509, Karnataka, India.
Stack ID	CPP (GTG-HRSG) - 2
Sample Description	Manual Stack Emission Monitoring
Sampling Date	02.08.2019
Sample Receipt	03.08.2019
Date of Analysis start & completion	03.08.2019 & 06.08.2019
Equipment Used	Vayubodhan VSS1
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	06.08.2019
Report No	HECS-OMPL/SEM/009/020819

General Details	
Ambient Temperature (°C)	30
Stack Diameter (m)	2.9
Stack Height (m)	70
Stack Temperature (°C)	185
Flue Gas Velocity (m/s)	3.9
Flue gas flow rate (Nm ³ /hr)	19175.4

Parameter monitored	Protocol	Results(mg/Nm ³)	Standard Norms(mg/Nm ³)
SPM	IS 11255(Part 1)-1985	17.2	50
Sulphur Dioxide(SO ₂)	IS 11255(Part 3)-1985	134.73	850
Oxides of Nitrogen(NO _x)	IS 11255(Part 7)-2005	119	350
Carbon monoxide (CO)	IS 5182(Part 10)-1999	BDL (DL 1)	150

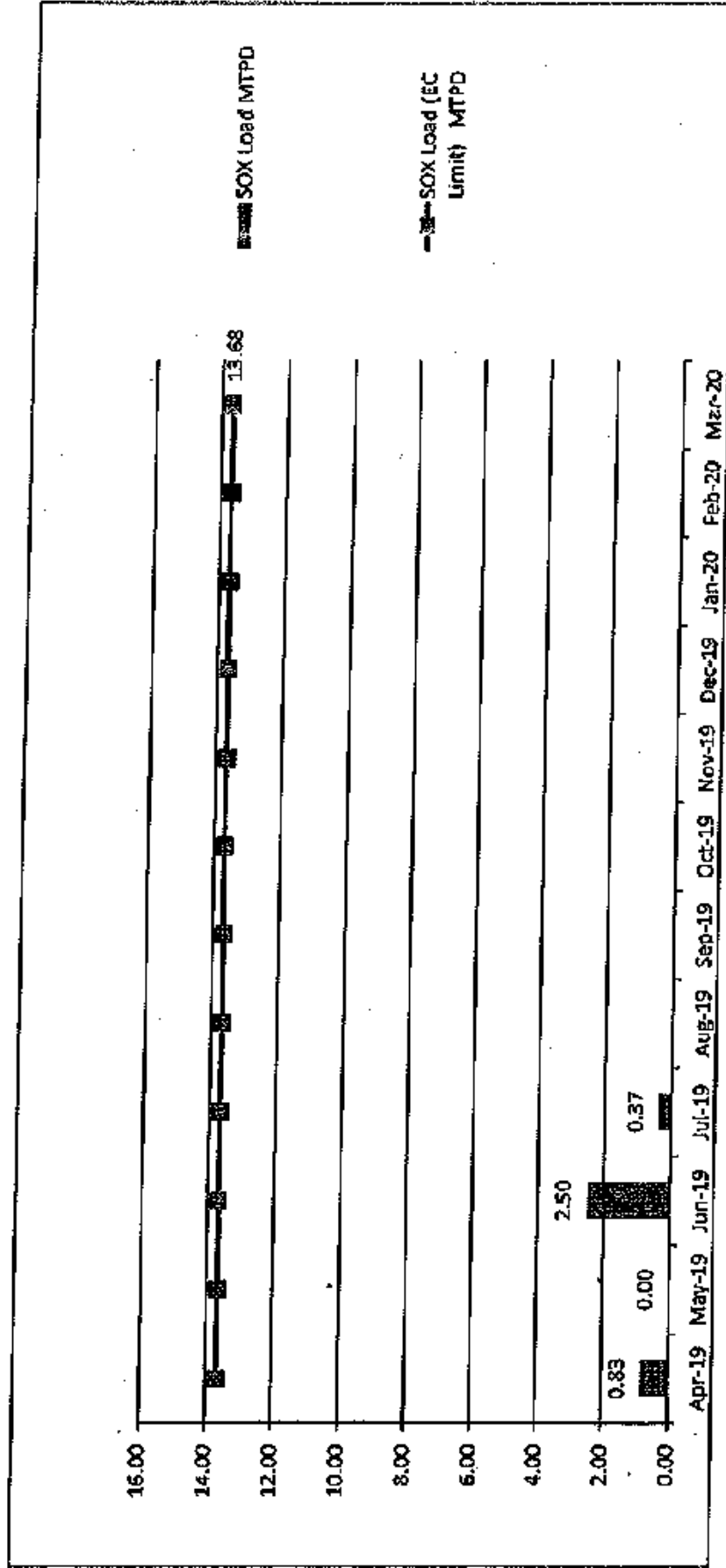
Note: mg/Nm³: milligram per normal cubic meter; SPM: Suspended Particulate Matter;
m/s - Meter per second; Nm³/hr - Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS

(Signature)
(Dr K GANESAN)
Authorized Signatory

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organisation. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 18 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test reports after invoking or issue of test report. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

HECS/Q/FMT/50



Form-1 (Rule 4)
Returns Regarding Water Consumed during the Month of July, 2019

Name and address of the Consumer	Purpose for which water consumed	Reading at the beginning 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 Liters	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, Pemudde, Mangalore -574 509	Industrial cooling, spraying in mine pits or boiler feed						
	Cooling Water	0	54178	54178			
	Boiler Feed Water	0	76713	76713			
	Fire water	0	28131	28131			
	Domestic purpose	0	3503	3503			
	Drinking Water & Sanitation	0	3503	3503			
	Processing whereby water gets polluted and the pollutants are easily bio-degradable						
Service Water			2766	2766			
Total Consumption				1,65,234			

Signature of the Consumer

Name

Shivaprakash, Sr. Manager (Dw)

Address

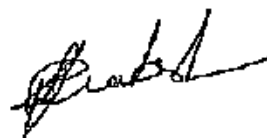
M/s ONGC Mangalore Petrochemicals Limited, Mangalore Special Economic Zone, Pemudde, Mangalore -574 509

ANNEXURE - H

ONGC Mangalore Petrochemicals Limited

Production Details for July, 2019
Net Naptha Processed – 1,43,131 MT

Sl. No.	Name of the Product	Quantity, MT
1	Paraxylene (Product)	79,251
2	Benzene (Co product)	19,222

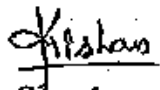


ANNEXURE-I

FORM - 10

[See Rule 19 (I)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	ONGC MANGALORE PETROCHEMICALS MANGALORE - 562 001 - PERNODE VILLAGE MANGALORE 894809 - 0824.282190		
2.	Sender's authorisation No.	DOB HWM SEO H.O Reg No-3485810-18		
3.	Manifest Document No.	200		
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9980027668		
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)		
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013		
7.	Vehicle Registration No.			
8.	Receiver's name and mailing address (including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128 Mob : 8861488860 / 70 e-mail : centurydrum@gmail.com		
9.	Receiver's authorisation No.	No.: PCB / WMC / 601 / HWM / 2016 / OB - 576 - Date : 31-8-2016		
10.	Waste Description			
11.	Total quantity No. of Containers	 m ³ or MT 400 Nos.		
12.	Physical form	(Solid / Semi solid / Sludge / Oily / Tarry / Slurry)		
13.	Special handing instruction and additional information			
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.		
	 Name and stamp : _____ Signature : 	Month Day Year 04 23 2019		
	Transporter acknowledgment of receipt of Wastes			
15.	Name and stamp CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128 Signature : _____	 Month Day Year 04 23 2019		
16.	Receiver's certification for receipt to hazardous and other wastes Name and stamp : _____ Signature : _____	 Month Day Year 04 23 2019		

Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board after signing of all seven copies

Copy2 (Yellow) : To be retained by the sender after taking signature after from the transporter and the rest of the signed copies to be carried by the transporter

Copy3 (Pink) : To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver

Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting waste

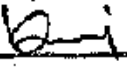
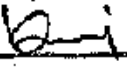
Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board

Copy6 (Blue) : To be sent by the receiver to the sender

Copy7 (Gray) : To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State

FORM - 10
[See Rule 19 (I)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	ONCE MANGALORE PETROCHEMICAL LTD MANGALORE - SEZ UNIT PEMUDE VILLAGE MANGALORE - 574809 - 0824232190		
2.	Sender's authorisation No.	DCB/HWM/SEO/H-D/Rg No 308569 dated 18		
3.	Manifest Document No.	228		
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9980027668		
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)		
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013		
7.	Vehicle Registration No.	KA02AE9126		
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasanthanarasapura Industrial Area, TUMKUR-572128 Mob : 8861488860 / 70 e-mail : centurydrum@gmail.com		
9.	Receiver's authorisation No.	No.: PCB / WMC / 601 / HWM / 2016 / OB - 576 - Date : 31-8-2016		
10.	Waste Description			
11.	Total quantity No. of Containers	 m ³ or MT 700 Nos.		
12.	Physical form	(Solid / Semi-solid / Sludge / Oily / Tarry / Slurry)		
13.	Special handling instruction and additional information			
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.		
	Name and stamp:  Signature: 	Month	Day	Year
		04	22	2019
	Transporter acknowledgment of receipt of Wastes			
15.	Name and stamp:  Signature: 	Month	Day	Year
	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasanthanarasapura Industrial Area, TUMKUR-572128	04	22	2019
16.	Receiver's certification for receipt to hazardous and other waste			
	Name and stamp:  Signature: 	Month	Day	Year
		04	22	2019

Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board after signing of this manifest.

Copy2 (Yellow) : To be retained by the sender after taking signature after from the transporter and the rest of the signed copies to be carried by the transporter

Copy3 (Pink) : To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver

Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting waste

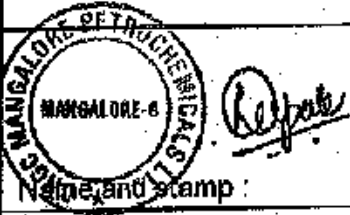
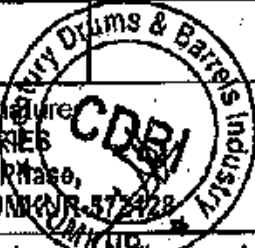
Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board

Copy6 (Blue) : To be sent by the receiver to the sender

Copy7 (Gray) : To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State

FORM - 10
[See Rule 19 (f)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

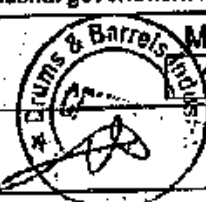
1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	ONGC MANGALORE PETROCHEMICALS LTD. MANGALORE-SE2 UNIT, PERMUDAVILLAGE MANGALORE-574809 08242872190						
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D. Reg No. 308569 DT 23/8/18						
3.	Manifest Document No.	189						
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9880027668						
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)						
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013						
7.	Vehicle Registration No.	KA06DA254						
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128 Mob : 8861488860 / 70 e-mail : centurydrum@gmail.com						
9.	Receiver's authorisation No.	No.: PCB / WMC / 601 / HWM / 2016 / OB - 576 - Date : 31-8-2016						
10.	Waste Description	EMPTY CARBOYS (USED PACKING MATERIAL)						
11.	Total quantity No. of Containers	 m ³ or MT 654 Nos.						
12.	Physical form	(Solid / Semi-solid / Sludge / Oily / Tarry / Slurry)						
13.	Special handling Instruction and additional information	—						
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.						
	 Name and stamp : Signature	<table border="1"> <tr> <td>Month</td> <td>Day</td> <td>Year</td> </tr> <tr> <td>8</td> <td>4</td> <td>10 2019</td> </tr> </table>	Month	Day	Year	8	4	10 2019
Month	Day	Year						
8	4	10 2019						
— Transporter acknowledgment of receipt of Wastes								
15.	Name and stamp CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128  Signature	<table border="1"> <tr> <td>Month</td> <td>Day</td> <td>Year</td> </tr> <tr> <td>8</td> <td>4</td> <td>10 2019</td> </tr> </table>	Month	Day	Year	8	4	10 2019
Month	Day	Year						
8	4	10 2019						
16.	Receiver's certification for receipt to hazardous and other waste Name and stamp : Signature 	<table border="1"> <tr> <td>Month</td> <td>Day</td> <td>Year</td> </tr> <tr> <td>8</td> <td>4</td> <td>10 2019</td> </tr> </table>	Month	Day	Year	8	4	10 2019
Month	Day	Year						
8	4	10 2019						

Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board after signing of seven copies
 Copy2 (Yellow) : To be retained by the sender after taking signature after from the transporter and the rest of the signed copies to be carried by the transporter
 Copy3 (Pink) : To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver

Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting waste
 Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board
 Copy6 (Blue) : To be sent by the receiver to the sender
 Copy7 (Grey) : To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State

FORM - 10
[See Rule 19 (I)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	ONOR MANGALORE PETROCHEMICALS LTD MANGALORE - SEZ UNIT - PERUMBE MANGALORE - 674809 - 08242898198		
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D. Reg No 308569		
3.	Manifest Document No.	198		
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9980027668		
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)		
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Dato-12-4-2013		
7.	Vehicle Registration No.	KA 06 D 4254		
8.	Receiver's name and mailing address (including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasanthi Narasapura Industrial Area, TUMKUR-572128 Mob : 8861488860 / 70 e-mail : centurydrum@gmail.com		
9.	Receiver's authorisation No.	No.: PCB / WMC / 601 / HWM / 2016 / OB - 576 - Date : 31-8-2016		
10.	Waste Description	EMPTY CARBOYS (used packing materials)		
11.	Total quantity No. of Containers	 m ³ or MT 713 Nos.		
12.	Physical form	(Solid / Semi solid / Sludge / Oily / Tarry / Slurry)		
13.	Special handling instruction and additional information	—		
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.		
	 			Month Day Year 04 11 2019
	Transporter acknowledgment of receipt of Wastes			
15.	Name and stamp CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasanthi Narasapura Industrial Area, TUMKUR-572128	Signature 	Month Day Year 04 11 2019	Month Day Year 04 11 2019
16.	Receiver's certification for receipt to hazardous waste	Name and stamp : Signature 		

To be forwarded by the sender to the State Pollution Control Board after signing of all seven copies
To be retained by the sender after taking signature after from the transporter and the rest of the
copies to be carried by the transporter
To be retained by the receiver (actual user or treatment storage and disposal facility operator)
signing the waste and the remaining four copies are to be duly signed by the receiver

Copy 1 (Orange) : To be handed over to the transporter by the receiver after accepting waste
Copy 2 (Green) : To be sent by the receiver to the State Pollution Control Board
Copy 3 (Blue) : To be sent by the receiver to the sender
Copy 4 (Gray) : To be sent by the transporter to the State Pollution Control Board
of the sender in case the sender is in another State

FORM - 10
[See Rule 19 (1)]

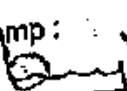
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	ONGE MANGALORE PERMUDE PETROCHEMICALS LTD MANGALORE - 574809 VILLAGE, MANGALORE - 574809
2.	Sender's authorisation No.	013
3.	Manifest Document No.	
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9880027688
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013
7.	Vehicle Registration No.	KA02AE9126
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128 Mob : 8861488860 / 70 e-mail : centurydrum@gmail.com
9.	Receiver's authorisation No.	No.: PCB / WMC / 601 / HWM / 2016 / OB - 576 - Date : 31-8-2016
10.	Waste Description	m ³ or MT
11.	Total quantity No. of Containers	700 Nos.
12.	Physical form	(Solid / Semi solid / Sludge / Oily / Tarry / Slurry)
13.	Special handling instruction and additional information	
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.
	Name and stamp  Signature: 	Month: 2, Day: 4, Year: 2019
	Transporter acknowledgment of receipt of Wastes	
15.	Name and stamp CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase Vasantha Narasapura Industrial Area, TUMKUR-572128 Signature: 	Month: 2, Day: 4, Year: 2019
16.	Receiver's certification for receipt to hazardous and other waste Name and stamp:  Signature: 	Month: 2, Day: 4, Year: 2019

Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board after signing of all seven copies
Copy2 (Yellow) : To be retained by the sender after taking signature after from the transporter and the rest of the signed copies to be carried by the transporter
Copy3 (Pink) : To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver
Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting was
Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board
Copy6 (Blue) : To be sent by the receiver to the sender
Copy7 (Gray) : To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State

FORM - 10
(See Rule 19 (I))

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	ONGC MANGALORE PETROCHEMICAL LTD MANGALORE, SEZ UNIT PERMUDA VILLAGE, MANGALORE - 574809 DCB HWM SEO H-D Reg No. 3085690	
2.	Sender's authorisation No.	238	
3.	Manifest Document No.	Century Drums & Barrels Industries, Tumkur.	
4.	Transporters Name & Address (Including Phone No. & e-mail)	OWN TRANSPORT Mob : 9980027668	
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)	
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013	
7.	Vehicle Registration No.	KA 02 AE 9126	
8.	Receiver's name and mailing address (including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128 Mob : 8861488860 / 70 e-mail : centurydrum@gmail.com	
9.	Receiver's authorisation No.	No.: PCB / WMC / 801 / HWM / 2016 / OB - 576 - Date : 31-8-2016	
10.	Waste Description		
11.	Total quantity No. of Containers	 m ³ or MT 400 - Nos.	
12.	Physical form	(Solid / Semi solid / Sludge / Oily / Tarry / Slurry)	
13.	Special handing instruction and additional information		
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.	
	Name and Stamp :  Signature : 	Month Day Year 0 4 2 9 2 0 1 9	
	Transporter acknowledgment of receipt of Wastes		
15.	Name and stamp CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128	Month Day Year 0 4 2 9 2 0 1 9	
16.	Receiver's certification for receipt to hazardous and other waste Name and stamp :  Signature : 	Month Day Year 0 4 2 9 2 0 1 9	

Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board after signing off all seven copies
Copy2 (Yellow) : To be retained by the sender after taking signature after from the transporter and the rest of the
signed copies to be carried by the transporter
Copy3 (Pink) : To be retained by the receiver (actual user or treatment storage and disposal facility operator)
after receiving the waste and the remaining four copies are to be duly signed by the receiver

Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting waste
Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board
Copy6 (Blue) : To be sent by the receiver to the sender
Copy7 (Gray) : To be sent by the receiver to the State Pollution Control Board
of the sender in case the sender is in another State

FORM - 10

Rule 19 (I)

MANI

HAZARDOUS AND OTHER WASTE

1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	ONCE MANGALORE PETROCHEMICAL LTD MANGALORE - SEZ UNIT PERMODE VILLAGE MANGALORE - 574809
2.	Sender's authorisation No.	DEB/HUM/SEO/H-D/Reg No. 3085690
3.	Manifest Document No.	237
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9980027868
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013
7.	Vehicle Registration No.	KA02AE9126
8.	Receiver's name and mailing address (including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasanthi Narasapura Industrial Area, TUMKUR-572128 Mob : 8861488800 / 70 e-mail : centurydrum@gmail.com
9.	Receiver's authorisation No.	No.: PCB / WMC / 601 / HWM / 2016 / OB - 576 - Date : 31-8-2016
10.	Waste Description	
11.	Total quantity No. of Containers	 m ³ or MT 700 Nos.
12.	Physical form	(Solid / Semi solid / Sludge / Oily / Tarry / Slurry)
13.	Special handling instruction and additional information	
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.
	Name and stamp : 	Signature : 
	Transporter acknowledgment of receipt of Wastes	Month Day Year 04302019
15.	Name and stamp CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasanthi Narasapura Industrial Area, TUMKUR-572128	Signature :  Month Day Year 04302019
16.	Receiver's certification for receipt to hazardous and other waste	Month Day Year 04302019
	Name and stamp : 	Signature : 

Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board after signing of all seven copies

Copy2 (Yellow) : To be retained by the sender after taking signature after from the transporter and the rest of the signed copies to be carried by the transporter

Copy3 (Pink) : To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver

Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting waste

Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board

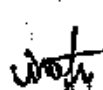
Copy6 (Blue) : To be sent by the receiver to the sender

Copy7 (Grey) : To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State

FORM - 10

[See Rule 19 (I)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	ONC MANGALORE PETROCHEMICAL LTD MANGALORE, SEZ UNIT PEMUDA VILL MANGALORE
2.	Sender's authorisation No.	DCB HWM SEO H.O Reg No 30856
3.	Manifest Document No.	236
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9980027668
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013
7.	Vehicle Registration No.	KA06DH254
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 181-B, Road No. 31, KIADB, 1st Phase, Vasanthi Narasapura Industrial Area, TUMKUR-572128 Mob : 8861488860 / 70 e-mail : centurydrum@gmail.com
9.	Receiver's authorisation No.	No.: PCB / WMC / 601 / HWM / 2016 / OB - 678 - Date : 31-8-2016
10.	Waste Description	
11.	Total quantity No. of Containers	720 m ³ or MT Nos.
12.	Physical form	(Solid / Semi-solid / Sludge / Oily / Tarry / Slurry)
13.	Special handling instruction and additional information	
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.
	Name and stamp :  Signature : 	Month Day Year 05 07 2019
	Transporter acknowledgment of receipt of Wastes	
15.	Name and stamp CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 181-B, Road No. 31, KIADB, 1st Phase, Vasanthi Narasapura Industrial Area, TUMKUR-572128 Signature : 	Month Day Year 05 07 2019
16.	Receiver's certification for receipt to hazardous and other waste Name and stamp :  Signature : 	Month Day Year 05 07 2019

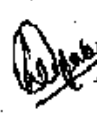
Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board after signing of all seven copies
Copy2 (Yellow) : To be retained by the sender after taking signature after from the transporter and the rest of the signed copies to be carried by the transporter
Copy3 (Pink) : To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver

Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting waste
Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board
Copy6 (Blue) : To be sent by the receiver to the sender
Copy7 (Gray) : To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State

FORM - 10

[See Rule 19 (I)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	ONGC MANGALORE PETROCHEMICALS LTD, MANGALORE, SEB UNIT, PERMUDE VILLAGE, MANGALORE 08242873191							
2.	Sender's authorisation No.	DCB/HWM/SEB/HD/REG No 3085690							
3.	Manifest Document No.	231							
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9980027688							
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)							
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013							
7.	Vehicle Registration No.	MH 18 BG 2378							
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128 Mob : 8861488860 / 70 e-mail : centurydrum@gmail.com							
9.	Receiver's authorisation No.	No.: PCB / WMC / 601 / HWM / 2016 / OB - 576 - Date : 31-8-2016							
10.	Waste Description	Empty Cans (and packing material)							
11.	Total quantity No. of Containers	 m ³ or MT 1070 Nos.							
12.	Physical form	(Solid / Semi solid / Sludge / Oily / Tarry / Slurry)							
13.	Special handling instruction and additional information	—							
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.							
	 	<table border="1"> <tr> <td>Month</td> <td>Day</td> <td>Year</td> </tr> <tr> <td>05</td> <td>09</td> <td>2019</td> </tr> </table>		Month	Day	Year	05	09	2019
Month	Day	Year							
05	09	2019							
	Transporter acknowledgment of receipt of Wastes								
15.	Name and stamp  Signature CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128	<table border="1"> <tr> <td>Month</td> <td>Day</td> <td>Year</td> </tr> <tr> <td>05</td> <td>09</td> <td>2019</td> </tr> </table>		Month	Day	Year	05	09	2019
Month	Day	Year							
05	09	2019							
16.	Receiver's certification for receipt to hazardous and other waste Name and stamp :  Signature : 	<table border="1"> <tr> <td>Month</td> <td>Day</td> <td>Year</td> </tr> <tr> <td>05</td> <td>09</td> <td>2019</td> </tr> </table>		Month	Day	Year	05	09	2019
Month	Day	Year							
05	09	2019							

Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board after signing and sealing the copy.
 Copy2 (Yellow) : To be retained by the sender after taking signature after from the transporter and the rest of the signed copies to be carried by the transporter
 Copy3 (Pink) : To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver

Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting waste
 Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board
 Copy6 (Blue) : To be sent by the receiver to the sender
 Copy7 (Grey) : To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State

FORM - 10

[See Rule 19 (I)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

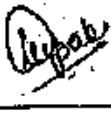
1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	ONGC MANGALORE PETROCHEMICALS LTD MANGALORE, SE2 UNIT, PERMUDE VILLAGE MANGALORE
2.	Sender's authorisation No.	DCB/HWM/SEO/HD/Reg No 3085690
3.	Manifest Document No.	229
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9980027688
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013
7.	Vehicle Registration No.	MH 20 AT 9794
8.	Receiver's name and mailing address (including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128 Mob : 8881488860 / 70 e-mail : centurydrum@gmail.com
9.	Receiver's authorisation No.	No.: PCB / WMC / 601 / HWM / 2016 / OB - 576 - Date : 31-8-2016
10.	Waste Description	Empty Carboys (used packing Material)
11.	Total quantity No. of Containers	 m ³ or MT 1070 Nos.
12.	Physical form	(Solid / Semi-solid / Sludge / Lolly / Tarry / Slurry)
13.	Special handling instruction and additional information	—
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.
	Name and stamp :  	Month Day Year 05 09 2019
	Transporter acknowledgment of receipt of Wastes	
16.	Name and stamp :  	Month Day Year 05 09 2019
16.	Receiver's certification for receipt to hazardous and other waste Name and stamp :  	Month Day Year 05 09 2019

Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board after signing of all seven copies.
Copy2 (Yellow) : To be retained by the sender after taking signature from the transporter and the rest of the signed copies to be carried by the transporter.
Copy3 (Pink) : To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver.

Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting waste.
Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board.
Copy6 (Blue) : To be sent by the receiver to the sender.
Copy7 (Gray) : To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State.

FORM - 10
[See Rule 19 (I)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

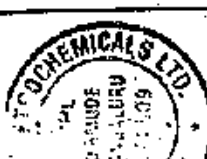
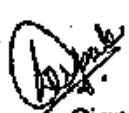
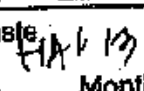
1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	ORIGI MANGALORE PETROCHEMICALS LTD MANGALORE, SEZ UNIT, PERMUDE, MANGALORE
2.	Sender's authorisation No.	DCB/HWM/SEO/HD/REG No. 3085690
3.	Manifest Document No.	230
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9980027668
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013
7.	Vehicle Registration No.	KA06D4254
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128 Mob : 8861488860 / 70 e-mail : centurydrum@gmail.com
9.	Receiver's authorisation No.	No.: PCB / WMC / 601 / HWM / 2016 / OB - 578 - Date : 31-8-2016
10.	Waste Description	EMPTY CARBOYS (USED PACKING MATERIAL)
11.	Total quantity No. of Containers	 m ³ or MT 720 Nos.
12.	Physical form	(Solid / Semi-solid / Sludge / Oily / Tarry / Slurry)
13.	Special handling instruction and additional information	—
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.
	Name and stamp :  	Month Day Year 05 09 2019
	Transporter acknowledgment of receipt of Wastes	
15.	Name and stamp CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128	Signature   Month Day Year 05 09 2019
16.	Receiver's certification for receipt to hazardous and other waste	
	Name and stamp : Signature  	Month Day Year 05 09 2019

Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board after signing of all seven copies
Copy2 (Yellow) : To be retained by the sender after taking signature after from the transporter and the rest of the signed copies to be carried by the transporter
Copy3 (Pink) : To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver
Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting waste
Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board
Copy6 (Blue) : To be sent by the receiver to the sender
Copy7 (Gray) : To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State

FORM - 10

[See Rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	ONGC MANGALORE PETROCHEMICALS LTD MANGALORE, SEZ UNIT, PERMUDA VILLAGE MANGALORE						
2.	Sender's authorisation No.	DCB/HWM/SEO/H.D/REG No 3085690						
3.	Manifest Document No.	232						
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9980027668						
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)						
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013						
7.	Vehicle Registration No.	MH20CT4335						
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128 Mob : 8861488860 / 70 e-mail : centurydrum@gmail.com						
9.	Receiver's authorisation No.	No.: PCB / WMC / 601 / HWM / 2016 / OB - 576 - Date : 31-8-2016						
10.	Waste Description	EMPTY CARBOYS (USED PACKING MATERIAL)						
11.	Total quantity No. of Containers	 m ³ or MT 1070 Nos.						
12.	Physical form	(Solid / Semi-solid / Sludge / Oily / Tarry / Slurry)						
13.	Special handling instruction and additional information	—						
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.						
	 	<table border="1"> <tr> <td>Month</td> <td>Day</td> <td>Year</td> </tr> <tr> <td>05</td> <td>09</td> <td>2019</td> </tr> </table>	Month	Day	Year	05	09	2019
Month	Day	Year						
05	09	2019						
	Name and stamp	Signature						
	Transporter acknowledgment of receipt of Wastes							
15.	Name and stamp CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase Vasantha Narasapura Industrial Area, TUMKUR-572128	 <table border="1"> <tr> <td>Month</td> <td>Day</td> <td>Year</td> </tr> <tr> <td>05</td> <td>09</td> <td>2019</td> </tr> </table>	Month	Day	Year	05	09	2019
Month	Day	Year						
05	09	2019						
16.	Receiver's certification for receipt to hazardous waste							
	Name and stamp : Signature	 <table border="1"> <tr> <td>Month</td> <td>Day</td> <td>Year</td> </tr> <tr> <td>05</td> <td>09</td> <td>2019</td> </tr> </table>	Month	Day	Year	05	09	2019
Month	Day	Year						
05	09	2019						

Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board after signing of all copies.
Copy2 (Yellow) : To be retained by the sender after taking signature after from the transporter and the rest of the signed copies to be carried by the transporter.
Copy3 (Pink) : To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver.
Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting waste.
Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board.
Copy6 (Blue) : To be sent by the receiver to the sender.
Copy7 (Gray) : To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State.

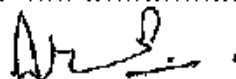
FORM 10
[See rule 19 (1)]
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail)	ONGC Mangalore Petrochemicals Limited Mangalore SEZ Unit, Permude Village Mangalore - 574 809 0824-2872190
2.	Sender's authorisation No.	PCB/HWM/SEO/H.D.Reg.No.308569 Dt: 23/11/2018 valid up to: 30/6/2021
3.	Manifest Document No	OMPL/HW/13/2019-20
4.	Transporter's name and address (including Phone No. and e-mail)	Century Drums & Barrels industries, Tumkur own Transport. Mob:9980027668
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No	PCB/SEO/WMC/2013-HD Reg. No- 212 DATE 12-04-2013
7.	Vehicle registration No.	KA06D4254
8.	Receiver's name and mailing address (including Phone No. and e-mail)	Century Drums & Barrels industries plot no 161- B,Road No.31,KIADB 1st phase vasantha narasapura Industrial Area ,Tumkur-572128 88614888860/70
9.	Receiver's authorisation No.	PCB/WMC/601/HWM/2016/OB-576 DATE 31- 08-2016
10.	Waste description:	EMPTY Carboys 50l/60l capacity (Used plastic packing material)
11.	Total quantity	700 no's
12.	Physical form	(Solid/Semisolid/Sludge/Oil/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	-
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name and stamp: Signature:	Month Day Year 0 4 1 2 2 0 1 9
15.	Transporter acknowledgement of receipt of Wastes	
	Name and stamp: Signature:	Month Day Year 0 4 1 2 2 0 1 9
16.	Receiver's certification for receipt of hazardous and other waste	
	Name and stamp: Signature:	Month Day Year 0 4 1 2 2 0 1 9

cat

	(ii) number of personnel trained		OHK STAFF
	(iii) number of personnel trained at the time of induction		OHK STAFF
	(iv) number of personnel not undergone any training so far		—
	(v) whether standard manual for training is available?		BIO MEDICAL WASTE HANDLING RULES 2016
	(vi) any other information		
8	Details of the accident occurred during the year		
	(i) Number of Accidents occurred		
	(ii) Number of the persons affected		
	(iii) Remedial Action taken (Please attach details if any)		
	(iv) Any Fatality occurred, details.		
9	Are you meeting the standards of air Pollution from the incinerator? How many times in last year could not met the standards?		NA
	Details of Continuous online emission monitoring systems installed		
10	Liquid waste generated and treatment methods in place. How many times you have not met the standards in a year?		NA
11	Is the disinfection method or sterilization meeting the log 4 standards? How many times you have not met the standards in a year?		
12	Any other relevant information		(Air Pollution Control Devices attached with the Incinerator)

Certified that the above report is for the period from August 2018 to July, 2019



Name and Signature of the Head of the Institution

Date: 20/8/2019
Place: OMR, MANHALLUR

	disposal facilities		<table border="1"> <thead> <tr> <th data-bbox="836 194 1134 293">Type of treatment equipment</th> <th data-bbox="1134 194 1214 371">No of units</th> <th data-bbox="1214 194 1294 416">Capacity Kg/day</th> <th data-bbox="1294 194 1449 488">Quantity treated or disposed in kg per annum</th> </tr> </thead> <tbody> <tr> <td data-bbox="836 488 1134 521">Incinerators</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="836 521 1134 555">Plasma Pyrolysis</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="836 555 1134 589">Autoclaves</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="836 589 1134 622">Microwave</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="836 622 1134 656">Hydroclave</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="836 656 1134 689">Shredder</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="836 689 1134 723">Needle tip cutter or</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="836 723 1134 757">destroyer</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="836 757 1134 790">Sharps</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="836 790 1134 824">encapsulation or</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="836 824 1134 857">concrete pit</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="836 857 1134 891">Deep burial pits:</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="836 891 1134 925">Chemical</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="836 925 1134 958">disinfection:</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="836 958 1134 992">Any other treatment</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="836 992 1134 1025">equipment:</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Type of treatment equipment	No of units	Capacity Kg/day	Quantity treated or disposed in kg per annum	Incinerators				Plasma Pyrolysis				Autoclaves				Microwave				Hydroclave				Shredder				Needle tip cutter or				destroyer				Sharps				encapsulation or				concrete pit				Deep burial pits:				Chemical				disinfection:				Any other treatment				equipment:			
Type of treatment equipment	No of units	Capacity Kg/day	Quantity treated or disposed in kg per annum																																																																				
Incinerators																																																																							
Plasma Pyrolysis																																																																							
Autoclaves																																																																							
Microwave																																																																							
Hydroclave																																																																							
Shredder																																																																							
Needle tip cutter or																																																																							
destroyer																																																																							
Sharps																																																																							
encapsulation or																																																																							
concrete pit																																																																							
Deep burial pits:																																																																							
Chemical																																																																							
disinfection:																																																																							
Any other treatment																																																																							
equipment:																																																																							
	(iii) Quantity of recyclable wastes sold to authorized recyclers after treatment in kg per annum.	:	Red Category (like plastic, glass etc.)																																																																				
	(iv) No of vehicles used for collection and transportation of biomedical waste	:	TIE UP WITH HIS MANAGEMENT ENV LTD FOR DISPOSAL OF BIO MEDICAL WASTE																																																																				
	(v) Details of incineration ash and ETP sludge generated and disposed during the treatment of wastes in Kg per annum		<table border="1"> <thead> <tr> <th data-bbox="836 1337 1134 1402">Quantity generated</th> <th data-bbox="1134 1337 1449 1402">Where disposed</th> </tr> </thead> <tbody> <tr> <td data-bbox="836 1402 1134 1435">Incineration</td> <td></td> </tr> <tr> <td data-bbox="836 1435 1134 1469">Ash</td> <td></td> </tr> <tr> <td data-bbox="836 1469 1134 1503">ETP Sludge</td> <td></td> </tr> </tbody> </table>	Quantity generated	Where disposed	Incineration		Ash		ETP Sludge																																																													
Quantity generated	Where disposed																																																																						
Incineration																																																																							
Ash																																																																							
ETP Sludge																																																																							
	(vi) Name of the Common Bio- : Medical Waste Treatment Facility Operator through which wastes are disposed of																																																																						
	(vii) List of member HCF not handed over bio-medical waste.																																																																						
6	Do you have bio-medical waste management committee? If yes, attach minutes of the meetings held during the reporting period		—																																																																				
7	Details trainings conducted on BMW		ONE STAFF																																																																				
	(i) Number of trainings conducted on BMW Management.		MONTHLY																																																																				

ANNEXURE-5

Form - IV (See rule 13) ANNUAL REPORT

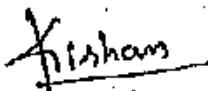
[To be submitted to the prescribed authority on or before 30th June every year for the period from January to December of the preceding year, by the occupier of health care facility (HCF) or common bio-medical waste treatment facility (CBWTF)]

Sl. No	Particulars		
1.	Particulars of the Occupier	:	
	(i) Name of the authorised person (occupier or : operator of facility)	:	S.S. NAYAK, CEO
	(ii) Name of HCF or CBMWTF	:	OHPL - OCCUPATIONAL HEALTH CENTRE
	(iii) Address for Correspondence	:	ONGC HANNAHORE PETROCHEMICAL LTD PERMUDA, MANHORE-574
	(iv) Address of Facility	:	ONGC HANNAHORE PETROCHEMICAL PERMUDA, MANHORE-57450
	(v) Tel. No, Fax, No	:	0824-2872005
	(vi) E-mail ID	:	usnaprakash@omplindia.com
	(vii) URL of Website	:	WWW.OMPL.CO.IN
	(viii) GPS coordinates of HCF or CBMWTF	:	12.99.474.86
	(ix) Ownership of HCF or CBMWTF	:	PUBLIC SECTOR (State Government or Private or Semi Govt. or any other)
	(x). Status of Authorisation under the Bio-Medical Waste (Management and Handling) Rules	:	Authorisation No.: 1203102067/Ry N-15219/2013-19/95 valid up to ONE TIME AUTHORIZATION
	(xi). Status of Consents under Water Act and Air Act	:	Valid up to: 30/6/2021
2.	Type of Health Care Facility	:	OHPL
	(i) Bedded Hospital	:	No. of Beds: 1
	(ii) Non-bedded hospital	:	

	Laborator (Clinic or Blood Bank or Clinical y or Research Institute or Veterinary Hospital or any other)												
	(iii) License number and its date of expiry												
3.	Details of CBMWTF	:											
	(i) Number healthcare facilities covered by CBMWTF	:											
	(ii) No of beds covered by CBMWTF	:											
	(iii) Installed treatment and disposal capacity of CBMWTF:	:	_____ Kg per day										
	(iv) Quantity of biomedical waste treated or disposed by CBMWTF	:	_____ Kg/day										
4.	Quantity of waste generated or disposed in Kg per annum (on monthly average basis)	:	<table border="1"> <tr> <td>Yellow Category</td><td>: 0.90 Kg</td></tr> <tr> <td>Red Category :</td><td>1.51 Kg</td></tr> <tr> <td>White:</td><td>1.92 Kg</td></tr> <tr> <td>Blue Category :</td><td>0.43 Kg</td></tr> <tr> <td>General Solid waste:</td><td></td></tr> </table>	Yellow Category	: 0.90 Kg	Red Category :	1.51 Kg	White:	1.92 Kg	Blue Category :	0.43 Kg	General Solid waste:	
Yellow Category	: 0.90 Kg												
Red Category :	1.51 Kg												
White:	1.92 Kg												
Blue Category :	0.43 Kg												
General Solid waste:													
5	Details of the Storage, treatment, transportation, processing and Disposal Facility												
	(i) Details of the on-site storage facility	:	<table border="1"> <tr> <td>Size</td><td>:</td></tr> <tr> <td>Capacity :</td><td></td></tr> <tr> <td>Provision of on-site storage</td><td>: (cold storage or any other provision)</td></tr> </table>	Size	:	Capacity :		Provision of on-site storage	: (cold storage or any other provision)				
Size	:												
Capacity :													
Provision of on-site storage	: (cold storage or any other provision)												

FORM - 10
[See Rule 19 (I)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	ONGC Mangalore Petrochemical Ltd Mangalore SEZ unit Perumadu village Mangalore 574809		
2.	Sender's authorisation No.	DEB/HWM/SEO/HD/Reg no. 3085690		
3.	Manifest Document No.	233		
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9980027668		
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)		
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013		
7.	Vehicle Registration No.	KA06D4254		
8.	Receiver's name and mailing address (including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128 Mob : 8861488860 / 70 e-mail : centurydrum@gmail.com		
9.	Receiver's authorisation No.	No.: PCB / WMC / 601 / HWM / 2016 / OB - 576 - Date : 31-8-2016		
10.	Waste Description			
11.	Total quantity No. of Containers	 m ³ or MT 200 Nos.		
12.	Physical form	(Solid / Semi solid / Sludge / Oily / Tarry / Slurry)		
13.	Special handling instruction and additional information			
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.		
	 Name and stamp :	 Signature	Month Day Year 06 30 2019	
	Transporter acknowledgment of receipt of Wastes			
15.	Name and stamp CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128	 Signature	Month Day Year 05 30 2019	
16.	Receiver's certification for receipt to hazardous and other waste Name and stamp :	 Signature	Month Day Year 05 30 2019	

Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board after signing of all the copies
 Copy2 (Yellow) : To be retained by the sender after taking signature after from the transporter and the rest of the signed copies to be carried by the transporter
 Copy3 (Pink) : To be retained by the receiver (a dual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver

Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting waste
 Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board
 Copy6 (Blue) : To be sent by the receiver to the sender
 Copy7 (Gray) : To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State

FORM-10

[See rule 19(f)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1	Senders Name & Mailing address: (Including Phone No. and e-mail)		ONGC-MANGALORE PERMUDA PETROCHEMICAL LTD MANGALORE - SE2 UNIT PERMUDA VILLAGE MANGALORE 674809	
2	Sender's Authorisation Number		PCB/HWM/SEO/H-D/R.8 NO 3085690-	
3	Manifest Document No.		1947	
4	Transporters Name & Address (Including Phone No. and e-mail)		ARUN INDUSTRIES B-64, 3rd Stage, Peenya Industrial Area, BANGALORE-560 058	
5	Type of vehicle		(Truck / Tanker / Special Vehicle)	
6	Transporters Registration No.			
7	Vehicle Registration No.		KA19AC0469	
8	Receiver's Name & Address (Including Phone No. and e-mail)		ARUN INDUSTRIES B-64 3rd Stage, Peenya Industrial Area, BANGALORE - 560 058. Phone : 9845695564	
9	Receiver's Authorisation Number		No. INR. No. 77 PCB/HWM/SEO/HD Reg. No.93464 / 2015-16 / H 655	
10	Waste Description :		SPENT/USED OIL	
11	Total Quantity No. of Containers		9.4 ~~MT~~ K.L. m or MT 47 Nos.	
12	Physical form		(Solid / Semi-Solid / Sludge / Oily / Tarry / Slurry / Liquid)	
13	Special Handling Instructions & Additional information :		-	
14	Sender's certificate : I hereby declare that the contents of this consignment are fully & accurately described above by proper shipping name and are categorised, packed, marked and labeled and are in all respect in proper condition for transport by road according to applicable national government regulations			
	Name & Stamp		Signature	Month Day Year 05 27 2019
15	Transporter's Acknowledgment of Receipt of Wastes			
	Name & Stamp		Signature	Month Day Year 05 27 2019
16	Receiver's Certification for Receipt of Hazardous and Other Waste			
	Name & Stamp Peenya Industrial Area, BANGALORE-560 058 Arun Industries, Bangalore		Signature For ARUN INDUSTRIES Proprietor	Month Day Year 05 27 2019
Copy 1 (White) To be forwarded by the sender to the State Pollution Control Board after signing all the seven copies. Copy 2 (Yellow) To be retained by the sender after taking signature on it from the transporter and the rest of the five signed copies to be carried by the transporter. Copy 3 (Pink) To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver. Copy 4 (Orange) To be handed over to the transporter by the receiver after accepting waste. Copy 5 (Green) To be sent by the receiver to the State Pollution Control Board. Copy 6 (Blue) To be sent by the receiver to the Sender. Copy 7 (Grey) To be sent by the receiver to the State Pollution Control Board, of the sender in case the sender is in another State.				

FORM-11

[See Rule 7(7)]

Transport Emergency (TREM) Card**1. Characteristics of Waste :**

S.No	Type of Waste	Physical Properties	Chemical Constituents	Exposure Hazards	First Aid Requirements

2. Procedure to be followed in case of fire :**3. Procedure to be followed in case of spillage/accident/explosion :****4. For expert services, please contact :**

i) Name & Address :

ii) Telephone No. :

(Name and Signature of Occupier)

FORM-10

[See rule 19(1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1	Senders Name & Mailing address: (Including Phone No. and e-mail)	ONGC MANGALORE PETROCHEMICALS LTD MANGALORE - SEZ UNIT, PERUMBE VILLAGE, MANGALORE - 574809		
2	Sender's Authorisation Number	PCB/HWM/SEO/HD/Reg. No. 808 5690		
3	Manifest Document No.	1948		
4	Transporters Name & Address (Including Phone No. and e-mail)	ARUN INDUSTRIES B-64, 3rd Stage, Peenya Industrial Area, BANGALORE - 560 058		
5	Type of vehicle	(Truck / Tanker / Special Vehicle)		
6	Transporters Registration No.			
7	Vehicle Registration No.	KA25 D 8394		
8	Receiver's Name & Address (Including Phone No. and e-mail)	ARUN INDUSTRIES B-64 3rd Stage, Peenya Industrial Area, BANGALORE - 560 058, Phone : 9845695564		
9	Receiver's Authorisation Number	No. INR. No. 77 PCB/HWM/SEO/HD Reg. No. 93484 / 2015-16 / H 655		
10	Waste Description :	SPENT/USED OIL		
11	Total Quantity No. of Containers	8.6 KL 43 m or MT Nos.		
12	Physical form	(Solid / Semi-Solid / Sludge / Oily / Tarry / Slurry / Liquid)		
13	Special Handling Instructions & Additional Information :	—		
14	Sender's certificate : I hereby declare that the contents of this consignment are fully & accurately described above by proper shipping name and are categorised, packed, marked and labeled and are in all respect in proper condition for transport by road according to applicable national government regulations			
	Name & Stamp	Signature	Month	Day Year
			05	27 2019
15	Transporter's Acknowledgment of Receipt of Wastes			
	Name & Stamp	Signature	Month	Day Year
			05	27 2019
16	Receiver's Certification for Receipt of Hazardous and Other Waste			
	Name & Stamp	Signature	Month	Day Year
	ARUN INDUSTRIES B-64, 3rd Stage, Peenya Industrial Area, BANGALORE - 560 058	ARUN INDUSTRIES	05	27 2019
	Proprietor			
Copy 1 (White) To be forwarded by the sender to the State Pollution Control Board after signing all the seven copies.		Copy 4 (Orange) To be handed over to the transporter by the receiver after accepting waste.		
Copy 2 (Yellow) To be retained by the sender after taking signature on it from the transporter and the rest of the five signed copies to be carried by the transporter.		Copy 5 (Green) To be sent by the receiver to the State Pollution Control Board.		
Copy 3 (Pink) To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver.		Copy 6 (Blue) To be sent by the receiver to the Sender.		
		Copy 7 (Grey) To be sent by the receiver to the State Pollution Control Board, of the sender in case the sender is in another State.		

FORM-11

[See Rule 7(7)]

Transport Emergency (TREM) Card**1. Characteristics of Waste :**

S.No	Type of Waste	Physical Properties	Chemical Constituents	Exposure Hazards	First Aid Requirements

2. Procedure to be followed in case of fire :**3. Procedure to be followed in case of spillage/accident/explosion :****4. For expert services, please contact :**

i) Name & Address :

ii) Telephone No. :

(Name and Signature of Occupier)

FORM - 10

[See Rule 19 (I)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	OMGC MANGALORE PETROCHEMICAL LTD MANGALORE SEZ Unit PERMUDA VILLAGE MANGALORE 574809.
2.	Sender's authorisation No.	DCB / HWM / SEO / HD / Reg No. 3086698
3.	Manifest Document No.	242
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9980027668
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013
7.	Vehicle Registration No.	KA 06D 4254
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128 Mob : 8861488660 / 70 e-mail : centurydrum@gmail.com
9.	Receiver's authorisation No.	No.: PCB / WMC / 801 / HWM / 2016 / OB - 576 - Date : 31-8-2016
10.	Waste Description	
11.	Total quantity No. of Containers	~~200~~ m ³ or MT 200 Nos.
12.	Physical form	(Solid / Semi-solid / Sludge / Oil / Tar / Slurry)
13.	Special handling instruction and additional information	
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.
	Name and stamp : 	Signature : 
	Transporter acknowledgment of receipt of Wastes	Month Day Year 05 29 2019
15.	Name and stamp CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase Vasantha Narasapura Industrial Area, TUMKUR-572128	Signature :  Month Day Year 05 29 2019
16.	Receiver's certification for receipt to hazardous and other waste	Month Day Year 05 29 2019
	Name and stamp : 	Signature :  Month Day Year 05 29 2019

Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board and one copy to be retained by the sender.

Copy2 (Yellow) : To be retained by the sender after taking signature after from the transporter and the rest of the signed copies to be carried by the transporter.

Copy3 (Pink) : To be retained by the receiver (actual user or treatment, storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver.

Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting waste.

Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board.

Copy6 (Blue) : To be sent by the receiver to the sender.

Copy7 (Gray) : To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State.

FORM - 10
[See Rule 19 (I)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	ONAC Mangalore petrochemical ltd Mangalore SEZ unit perumde village Mangalore 574 809
2.	Sender's authorisation No.	DCB/HWM/SKO/HD/Reg No. 3085690
3.	Manifest Document No.	234
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9980027668
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013
7.	Vehicle Registration No.	KA06AE4324
8.	Receiver's name and mailing address (Including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128 Mob : 8861488860 / 70 e-mail : centurydrum@gmail.com
9.	Receiver's authorisation No.	No.: PCB / WMC / 601 / HWM / 2016 / OB - 576 - Date : 31-8-2016
10.	Waste Description	
11.	Total quantity No. of Containers	 m ³ or MT 100 Nos.
12.	Physical form	(Solid / Semi solid / Sludge / Oily / Tarry / Slurry)
13.	Special handling instruction and additional information	
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.
	Name and stamp : Signature	Month Day Year 05 30 2019
	Transporter acknowledgment of receipt of Wastes	
15.	Name and stamp CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128	Month Day Year 05 80 2019
16.	Receiver's certification for receipt to hazardous and other waste Name and stamp : Signature	Month Day Year 05 30 2019

Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board after signing of all seven copies
Copy2 (Yellow) : To be retained by the sender after taking signature after from the transporter and the rest of the signed copies to be carried by the transporter
Copy3 (Pink) : To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver

Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting waste
Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board
Copy6 (Blue) : To be sent by the receiver to the sender
Copy7 (Gray) : To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State



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

ओ एन जी सी मंगलूर पेट्रोकेमिकल्स लिमिटेड

(मंगलूर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड की सहायक कंपनी)

ONGC Mangalore Petrochemicals Ltd.

(A Subsidiary of Mangalore Refinery & Petrochemicals Ltd.)

एमएसईजेड पेमुदे, मंगलूर - ५७४ ५०९ MSEZ, Perumde, Mangaluru - 574 509.

CIN : U40107KA2008GOI041258 दूरभाष Direct Line: 0824-2872000, फैक्स Fax: 0824-2872005, Website: www.ompl.co.in

REF: OMPL/PCB/HRP/2019-20/

Date: 16/09/2019

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

Dear Sir,

Sub: Submission of Environmental Monitoring Report for the Month of August, 2019.

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 August, 2019 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 August, 2019, as Annexure-E
6. Production Report as Annexure-F

Thanking You,


Ramakantha Prabhu
Chief Manager (EN)

CC: Member Secretary, KSPCB, Bangalore
CC: Head (Technical), MSEZ
CC: CEO, OMPL for Info
CC: CDO, OMPL for Info.

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

G-48, Industrial Estate, Balakrishna, Mangalore, Karnataka - 576011.
Ph: 0824 - 2408111, Email: kso@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-5788

AMBIENT AIR QUALITY MONITORING TEST REPORT - AUGUST 2019

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	09.09.2019
Report No	HECS/AA/001/090919

CONSOLIDATED TEST RESULTS

August '19 - Week		32-Week	33-Week			34-Week		35-Week		36-Week		Avg. Value
Parameters	NAAQ	01.08.19	05.08.19	08.08.19	12.08.19	16.08.19	19.08.19	22.08.19	26.08.19	29.08.19		
PM _{2.5} (µg/m ³)	60	12.7	11.9	12.5	14.1	13.5	14.1	13.8	13.5	13.7		13.31
PM ₁₀ (µg/m ³)	100	33.1	32.5	33.5	33.2	34.1	33.5	34.5	32.5	33.1		33.33
SO ₂ (µg/m ³)	80	5.9	6.1	6.1	5.8	5.7	5.1	5.4	5.8	5.9		5.75
NO ₂ (µg/m ³)	80	7.4	7.2	6.3	6.1	5.9	7.2	6.8	6.4	6.1		6.6
CO (mg/m ³)	2.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL		BDL
O ₃ (µg/m ³)	100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL		BDL
NH ₃ (µg/m ³)	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL		BDL
Pb (µg/m ³)	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL		BDL
As (ng/m ³)	6.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL		BDL
Ni (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL		BDL
Benzene (µg/m ³)	05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL		BDL
B(a)P (ng/m ³)	01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL		BDL

Test Methods Followed:

PM₁₀ : 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)
 SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
 NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
 O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
 NH₃ : 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)
 C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
 B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene - (DL 1 µg/m³); B(a)P - Benzo - a - pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory

(K. Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by Hubert Enviro Care Systems (P) Ltd. 2. Samples are not stored by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss of damage caused by use or misuse of test report after involving or issue of test report. 5. The test results are valid only for the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 091.

Ph: 42985566 Fax: 42985500 E-mail: labsales@hecs.in

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2406111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

AMBIENT AIR QUALITY MONITORING TEST REPORT - AUGUST 2019

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	Shantigudde
Report Date	09.09.2019
Report No	HECS/AA/002/090919

CONSOLIDATED TEST RESULTS

August '19 - Week		32-Week	33-Week			34-Week		35-Week		36-Week		Avg. Value
Parameters	NAAQ	01.08.19	05.08.19	08.08.19	12.08.19	16.08.19	19.08.19	22.08.19	26.08.19	29.08.19		
PM _{2.5} (µg/m ³)	60	14.5	14.1	13.9	15.2	14.9	15.3	14.3	14.5	14.9	14.62	
PM ₁₀ (µg/m ³)	100	35.8	34.2	33.1	35.2	35.8	36.2	35.4	36.8	35.9	35.37	
SO ₂ (µg/m ³)	80	6.3	6.1	5.8	6.2	5.9	5.8	5.9	5.3	5.6	5.87	
NO ₂ (µg/m ³)	80	7.1	6.9	6.3	7.1	6.1	6.1	6.3	6.2	6.3	6.48	
CO (mg/m ³)	2.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
O ₃ (µg/m ³)	100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
NH ₃ (µg/m ³)	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
Pb (µg/m ³)	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
As (ng/m ³)	6.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
Ni (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
Benzene (µg/m ³)	05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
B(a)P (ng/m ³)	01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	

Test Methods Followed:PM₁₀ : 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)SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)NH₃ : 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)

C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)

B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene - (DL 1 µg/m³); B(a)P - Benzo - α - pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory

(Dr. K. Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent of HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of test report. 4. Under no circumstance lab accepts any liability or loss/damage caused by use or misuse of test report after its release or issue of test report. 5. The test results are preliminary and subject to retest. 6. Not under scope of accreditation.

HECS/Q/FMT/750

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd 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



Certificate No. TC-5786

Laboratory Services Division

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

AMBIENT AIR QUALITY MONITORING TEST REPORT-AUGUST 2019

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	09.09.2019
Report No	HECS/AA/003/090919

August '19 - Week		32-Week	33-Week		34-Week		35-Week		36-Week		Avg. Value
Parameters	NAAQ	01.08.19	05.08.19	08.08.19	12.08.19	16.08.19	19.08.19	22.08.19	26.08.19	29.08.19	
PM _{2.5} (µg/m ³)	60	16.2	15.8	16.1	16.4	15.4	16.1	16.3	15.9	16.3	16.06
PM ₁₀ (µg/m ³)	100	35.9	34.8	35.3	33.6	35.5	34.6	32.8	36.4	33.8	34.74
SO ₂ (µg/m ³)	80	6.7	6.4	6.1	6.5	6.1	6.2	6.3	6.7	6.4	6.38
NO ₂ (µg/m ³)	80	7.2	6.9	6.8	7.1	6.8	6.9	6.5	7.3	7.1	6.96
CO (mg/m ³)	2.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O ₃ (µg/m ³)	100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NH ₃ (µg/m ³)	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb (µg/m ³)	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene (µg/m ³)	05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂-Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃-Ozone (DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P- Benzo -α-pyrene (DL 0.5 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory
Dr. K. Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent of HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be released more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss or damage caused by use or misuse of test report after invalidating or issue of test report. 5. The test results are valid only for the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 16, 82nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in

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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

AMBIENT AIR QUALITY MONITORING TEST REPORT - AUGUST 2019

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	09.09.2019
Report No	HECS/AA/004/090919

CONSOLIDATED TEST RESULTS

August '19 - Week		32-Week	33- Week		34-Week		35-Week		36-Week		Avg. Value
Parameters	NAAQS	01.08.19	05.08.19	08.08.19	12.08.19	16.08.19	19.08.19	22.08.19	26.08.19	29.08.19	
PM _{2.5} (µg/m ³)	60	17.6	16.9	17.8	17.5	17.2	16.9	17.3	16.9	17.4	17.27
PM ₁₀ (µg/m ³)	100	36.8	36.2	35.8	35.2	34.8	33.8	32.5	31.8	31.5	34.26
SO ₂ (µg/m ³)	80	6.3	6.1	6.2	6.5	6.6	6.8	6.5	6.9	6.3	6.46
NO ₂ (µg/m ³)	80	7.5	7.2	7.1	6.9	7.3	7.2	6.9	7.3	7.6	7.22
CO (mg/m ³)	2.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O ₃ (µg/m ³)	100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NH ₃ (µg/m ³)	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb (µg/m ³)	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene	05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P - Benzo-a-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



[Signature]

Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances a lab accepts any liability or loss/damage caused by use or misuse of test report after invoking or issue of test report. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

HECS/Q/FMT/60

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

AMBIENT AIR QUALITY MONITORING TEST REPORT - AUGUST 2019

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	09.08.2019
Report No	HECS/AA/005/090919

CONSOLIDATED TEST RESULTS

August '19 - Week		32-Week	33- Week			34-Week		35-Week		36-Week		Avg. Value
Parameters	NAAQ	01.08.19	05.08.19	08.08.19	12.08.19	16.08.19	19.08.19	22.08.19	26.08.19	29.08.19		
PM _{2.5} (µg/m ³)	60	16.3	16.3	15.9	16.1	16.5	14.4	15.3	14.8	15.6	15.68	
PM ₁₀ (µg/m ³)	100	33.8	34.1	33.8	32.8	33.9	32.9	31.9	32.3	33.5	33.22	
SO ₂ (µg/m ³)	80	6.1	6.5	6.3	6.7	6.2	6.4	6.7	6.8	6.5	6.46	
NO ₂ (µg/m ³)	80	7.3	7.1	7.5	7.2	7.4	6.9	7.3	7.2	7.3	7.24	
CO (mg/m ³)	2.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
O ₃ (µg/m ³)	100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
NH ₃ (µg/m ³)	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
Pb (µg/m ³)	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
As (ng/m ³)	5.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
Ni (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
Benzene (µg/m ³)	05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
B(a)P (ng/m ³)	01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	

Test Methods Followed:PM₁₀ : 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)SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)O₃ : HECS/AIR/SOP/006 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)NH₃ : 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)

C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)

B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron; PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene - (DL 1 µg/m³); B(a)P - Benzo - α-pyrène (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory

Dr K Ganesan - Lab Manager

1. The report is full or part shall not be used for any promotional or publicity purpose without written consent of HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 18 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by user or misuse of test report after receiving or failure of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd 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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF GROUND WATER QUALITY MONITORING

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, Premude
Sample drawn by	HECS
Date of Sampling	05.08.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	06.08.2019
Date of Analysis start & completion	06.08.2018 & 10.08.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	29.08.2019
Report No	HECS/W/001/060819

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Pt -11) 1983	-	7.89	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	51.8	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	18.53	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	40.56	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	14.14	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	97	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	13.57	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.055	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt -31) 1978	mg/L	6.8	45 max
15.	Iron as Fe	IS 3025 (Pt -53) 2003	mg/L	0.05	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability for loss/damage caused by use or misuse of test report after invalidating or issue of test report. 5. The test results relate only to the test item. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 10, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in

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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF GROUND WATER QUALITY MONITORING

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 Gagnet Labour Colony
Sample drawn by	HECS
Date of Sampling	05.08.2019
Qty. of sample received	2 L In HDPE Can + 100 sterile container
Date of sample received	06.08.2019
Date of Analysis start & completion	06.08.2019 & 10.08.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	29.08.2019
Report No	HECS/W/002/060819

RESULTS

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	-	7.81	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	Light brown	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	26	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	61.05	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	11.12	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	66.18	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	17.17	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	8.09	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	138	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	5.34	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	4.2	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.03	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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoking or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/150

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd 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 - 2406111, Email: krc@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 OF GROUND WATER QUALITY MONITORING

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	05.08.2019
Qty. of sample received	2 L In HDPE Can + 100 sterile container
Date of sample received	06.08.2019
Date of Analysis start & completion	06.08.2019 & 10.08.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	29.08.2019
Report No	HECS/W/003/060819

RESULTS

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	-	7.93	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	57.12	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	17.17	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	38.43	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	13.13	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	3.5	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	101	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	7.8	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	4.2	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.02	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

Notes: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

Authorized Signatory
R.K. Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss / damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 32nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

C-45, Industrial Estate, Belkandpady, 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-5788

TEST REPORT OF GROUND WATER QUALITY MONITORING

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	12.08.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	12.08.2019
Date of Analysis start & completion	12.08.2019 & 17.08.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	29.08.2019
Report No	HECS/W/004/120819

RESULTS

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	-	6.57	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	60	500 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	11.2	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	38.4	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	10.1	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	7.8	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	184	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	BDL (DL 0.2)	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt -31) 1978	mg/L	4.1	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-Milliliter

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

End of Report



Authorized Signatory
K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoking or issue of test report. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

HECS/Q/FMT/60

Hubert Enviro Care Systems (P) Ltd.

H.O.: #10, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42986600 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-5788

TEST REPORT OF OPEN WELL WATER QUALITY MONITORING

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	05.08.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	06.08.2019
Date of Analysis start & completion	06.08.2019 & 10.08.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	29.08.2019
Report No	HECS/W/005/060819

RESULTS

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	-	6.54	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	25.9	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	6.67	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	10.67	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	38.39	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	2.24	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	108	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	8.23	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.22	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt -31) 1978	mg/L	4.1	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	BDL (DL 0.02)	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.	<i>Escherichia coli</i>	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



Authorized Signatory
(K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after involving or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 10, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42885555 Fax: 42885500 E-mail: labsales@hecs.in

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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF OPEN WELL WATER QUALITY MONITORING

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premude Village, Mangalore - 574509
Sample Description	DW2 - Open Well Water collected from Shantigudda Village
Sample drawn by	HECS
Date of Sampling	05.08.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	06.08.2019
Date of Analysis start & completion	06.08.2019 & 10.08.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	29.08.2019
Report No	HECS/W/006/060819

RESULTS

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	-	7.65	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	33.3	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	11.12	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	36.29	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	21.21	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	112	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	6.91	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	4.4	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.04	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



Authorized Signatory
K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invalidating or lapse of test report. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

HECS/Q/FMT/50

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, Balkempady, Mangalore, Karnataka - 576011.
Ph: 0824 - 2404111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-8786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

PSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF OPEN WELL WATER QUALITY MONITORING

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 Premude Village
Sample drawn by	HECS
Date of Sampling	05.08.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	06.08.2019
Date of Analysis start & completion	06.08.2019 & 10.08.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	29.08.2019
Report No	HECS/W/007/060819

RESULTS

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	-	7.73	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	71.4	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	20.4	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	38.43	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	14.14	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	5	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	100	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	6.2	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	3.8	45 max
15.	Iron as Fe	IS 3025 (Pt -53) 2003	mg/L	BDL (DL 0.02)	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	<i>Escherichia coli</i>	IS 1622:1981(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



Authorized Signatory
(D. S. Suresh - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS corporation. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/80

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 16, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

C-46, Industrial Estate, Balakempady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2409111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

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

TEST REPORT OF SURFACE WATER QUALITY MONITORING

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	12.08.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	12.08.2019
Date of Analysis start & completion	12.08.2019 & 17.08.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	29.08.2019
Report No	HECS/W/008/120819

RESULTS

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	-	6.53	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	1.4	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	50	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	14.8	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	38.4	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	24.3	1000 max
10.	Magnesium as Mg.	IS 3025 (Pt -46) 1994	mg/L	3.1	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	134	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	5.3	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.26	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt -31) 1978	mg/L	5.1	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.25	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-Nephelometric Turbidity 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



Authorized Signatory
(Dr. Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoice/issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/IO/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: #18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42885565 Fax: 42885500 E-mail: labsales@hecs.in

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



Certificate No. TC-5786

Laboratory Services Division

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

TEST REPORT OF SURFACE WATER QUALITY MONITORING

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	12.08.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	12.08.2019
Date of Analysis start & completion	12.08.2019 & 17.08.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	29.08.2019
Report No.	HECS/W/009/12.0819

RESULTS

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	-	7.51	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	4	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	18.36	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	5.3	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	12.8	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	14.1	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	57	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	5.34	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	5.9	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.02	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



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

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after involving or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/NO/FMT/80

ANNEXURE-C

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42885555 Fax: 42885600 E-mail: labsales@hecs.in

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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSA 18001 Certified.

NOISE MONITORING TEST REPORT - AUGUST 2019

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	05.08.2019
Report Date	30.08.2019
Report No.	HECS/N/001/300819

RESULTS

S.No.	Sampling Location	MoEFCC requirements in dB		Avg. Noise level observed in dB	
		Day	Night	Day	Night
1.	OMPL-North	75	70	61.4	55.4
2.	OMPL-South			61.9	56.3
3.	OMPL-East			60.1	54.2
4.	OMPL-West			63.2	57.1

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*****



Authorized Signatory
K Ganesan - Lab Manager

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 093.

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



Certificate No. TC-6788

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF ETP EFFLUENT MONITORING

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	12.08.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	12.08.2019
Date of Analysis start & completion	12.08.2019 & 19.08.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	29.08.2019
Report No	HECS/WW/002/120819

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
1.	Color	IS 3025 (Pt 4):1983(RA 2006)	Hazen Units	Colourless	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	25400 APHA 22nd Edn., 2012	mg/L	6	100
4.	pH	IS 3025 (Pt 11):1983(RA 2006)	-	7.63	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
	Total Residual Chlorine as Cl ₂	IS 3025 (Pt 26):1986(RA 2009)	mg/L	BDL (DL 0.1)	1
8.	Ammonical Nitrogen as N	IS 3025 Pt (34):1988	mg/L	5.8	50
9.	Total Kjeldhal Nitrogen as N	IS 3025 Pt (34):1988	mg/L	28.4	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	4.05	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(Pt 52):2003 (RA 2009)	mg/L	BDL (DL 0.01)	2.0
16.	Copper as Cu	IS 3025 S,(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



Authorized Signatory

K. Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report other involving or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

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 - 576011.
Ph: 0824 - 2406111, 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 OF ETP EFFLUENT MONITORING

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	12.08.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	12.08.2019
Date of Analysis start & completion	12.08.2019 & 19.08.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	29.08.2019
Report No	HECS/WW/002/120819

RESULTS

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.	Pt lcle Size of Suspended solids	APHA 22nd 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	0.04	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 EFFLUENT WATER AS ABOVE PARAMETERS ARE WITHIN STANDARDS

End of Report



Authorized Signatory
Dr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability for loss/damage caused by use or misuse of test report after inrolling or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

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

G-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2409111, 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-5788

TEST REPORT OF ETP EFFLUENT MONITORING

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	26.08.2019
Qty. of sample received	5 L In HDPE Can + 1 L amber glass bottle
Date of sample received	26.08.2019
Date of Analysis start & completion	26.08.2019 & 03.09.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	03.09.2019
Report No	HECS/WW/006/260819

RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
1.	Color	IS 3025 (Pt 4):1983(RA 2006)	Hazen Units	Colourless	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	25400 APHA 22nd Edn., 2012	mg/L	BDL (DL 4)	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	28	Shall not exceed 5 degree Centigrade above the receiving water temperature
6.	Oil & Grease	IS 3025,4(Pt 39):2000 (RA 2009)	mg/L	4	5
7.	Total Residual Chlorine as Cl ₂	IS 3025 (Pt 26):1986(RA 2009)	mg/L	BDL (DL 0.1)	1
8.	Ammonical Nitrogen as N	IS 3025 Pt (34):1988	mg/L	6.5	50
9.	Total Kjeldhal Nitrogen as N	IS 3025 Pt (34):1988	mg/L	30.2	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	10	30
12.	COD as O ₂	IS 3025 Pt (58):2006	mg/L	24.2	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(Pt 52):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

Authorized Signatory
(Mr. Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after involving or issue of test report. 5. The test results relate only to the test item. 6. Not under scope of accreditation.

HECS/Q/FMT/50

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

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



Certificate No. TC-5788

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT OF ETP EFFLUENT MONITORING

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SEZ, Premuda Village, Mangalore - 574509
Sample Description	Guard Pond Pump Discharge (ETP Effluent)
Sample drawn by	HECS
Date of Sampling	26.08.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	26.08.2019
Date of Analysis start & completion	26.08.2019 & 03.09.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	03.09.2019
Report No	HECS/WW/006/260819

RESULTS

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.	Pticle Size of Suspended solids	APHA 22nd 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	0.06	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.	Benz(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

Notes: BDL - Below Detection Limit; DL - Detection Limit; mg/L - Milligrams per liter

CONCLUSION: ETP OUTLET EFFLUENT WATER AS ABOVE PARAMETERS ARE WITHIN STANDARDS

End of Report



Authorized Signatory

[Signature]

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by Hubert Enviro Care Systems (P) Ltd. 2. Samples are not drawn by HECS or its employees or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the sample submitted. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Form-1 (Rule 4)
Returns Regarding Water Consumed during the Month of Aug, 2018

Name and address of the Consumer	Purpose for which water consumed	Reading at the beginning 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 Liters	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 quality for rebate according to the assessee	Remarks
M/s ONGC Mangalore Petrochemicals Limited, Mangalore Special Economic Zone, Pannudi, Mangalore -574 509	Industrial cooling, spraying in mine pits or boiler feed						
	Cooling Water	0	60112	60112			
	Boiler Feed Water	0	69038	69038			
	Fire water	0	25700	25700			
	Domestic purpose						
	Drinking Water & Sanitation	0	3212	3212			
	Processing whereby water gets polluted and the pollutants are easily bio-degradable						
	Service Water						
Total Consumption			2413	2413			
				2413			
				1,50,475			

Signature of the Consumer

Name

Address


Shivaprasad, Sr. Manager (Enr)

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

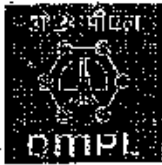
ANNEXURE-F

ONGC Mangalore Petrochemicals Limited

Production Details for August, 2019
Net Naptha Processed - 1,35,647 MT

Sl. No.	Name of the Product	Quantity, MT
1	Paraxylene (Product)	75,868
2	Benzene (Co product)	17,632

[Signature]



ओ एन जी सी मंगलूर पेट्रोकेमिकल्स लिमिटेड

(मंगलूर रिफाइनरी एण्ड पेट्रोकेमिकल्स लिमिटेड की सहायक कंपनी)

ONGC Mangalore Petrochemicals Ltd.

(A Subsidiary of Mangalore Refinery & Petrochemicals Ltd.)

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

स्पेशल इजिड घेमुदे, मंगलूर - ५७४ ५०९ MSEZ, Perumde, Mangaluru - 574 509.

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

REF: OMPL/PCB/HRP/2019-20/

Date: 14/10/2019

To:

The Environmental Officer

Regional Office

KSPCB

Balkampady, Mangalore-11

Mangalore SEZ Ltd. - 5200
Documents & Contents subject to verification
Received date: 15.10.2019
Received by: V. S. Shetty

Dear Sir,

Sub: Submission of Environmental Monitoring Report for the Month of September, 2019.

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 September, 2019 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. Stack Monitoring Analysis Report, Annexure-E
6. Returns Regarding Water Consumed, for the Month of September, 2019, as Annexure-F
7. Production Report as Annexure-G
8. Hazardous waste Manifest as Annexure-H

Thanking You,

Ramakantha Prabhu
Chief Manager (EN)

Vinay Kumar
Charan / Officer in charge
compliance

14/10/19

CC: Member Secretary, KSPCB, Bangalore

CC: Head (Technical), MSEZ

CC: CEO, OMPL for Info

CC: COO, OMPL for Info.

ANNEXURE - A

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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT

Name of the Industry	M/s. ONGC Mangalore Petrochemicals Limited (OMPL)
Address of the Industry	Mangalore SE2, 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	04.10.2019
Report No	HECS/AA/001/041019

AMBIENT AIR QUALITY MONITORING: CONSOLIDATED TEST RESULTS - SEPTEMBER 2019

SEPTEMBER '19 - Week		37-Week		38-Week		39-Week		40-Week		41-Week	Avg. Value
Parameters	NAAQ	03.09.19	06.09.19	09.09.19	12.09.19	16.09.19	19.09.19	22.09.19	26.09.19	30.09.19	
PM _{2.5} (µg/m ³)	60	13.9	12.9	13.5	13.2	13.4	12.8	13.5	12.9	13.8	13.32
PM ₁₀ (µg/m ³)	100	36.8	35.5	34.9	35.8	36.2	35.3	34.9	35.8	36.9	35.78
SO ₂ (µg/m ³)	80	6.2	7.2	7.5	6.8	7.3	7.1	6.6	6.9	7.5	7.01
NO ₂ (µg/m ³)	80	8.9	8.5	8.1	7.9	8.5	8.3	7.8	8.3	7.6	8.21
CO (mg/m ³)	2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O ₃ (µg/m ³)	100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NH ₃ (µg/m ³)	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb (µg/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

- PM₁₀ : 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)
- SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
- NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
- O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
- NH₃ : 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)
- C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
- B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P - Benzo - a - pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory

(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent of HECS organisation. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability for loss/damage caused by use or misuse of test report after its issue. 5. The test results relate only to the test items. 6. It is not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 10, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 576011.
Ph: 0824 - 2468111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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	04.10.2019
Report No	HECS/AA/002/041019

AMBIENT AIR QUALITY MONITORING: CONSOLIDATED TEST RESULTS - SEPTEMBER 2019

SEPTEMBER '19 - Week		37-Week		38-Week		39-Week		40-Week		41-Week	Avg. Value
Parameters	NAAQ	03.09.19	06.09.19	09.09.19	12.09.19	16.09.19	19.09.19	22.09.19	26.09.19	30.09.19	
PM _{2.5} (µg/m ³)	60	14.8	13.6	14.2	15.1	14.5	14.7	13.9	14.6	14.8	14.4
PM ₁₀ (µg/m ³)	100	36.5	35.2	36.3	36.8	36.2	35.8	36.5	35.8	35.3	36.04
SO ₂ (µg/m ³)	80	6.8	6.4	6.5	6.8	6.7	6.6	6.9	6.3	6.6	6.62
NO ₂ (µg/m ³)	80	8.5	8.3	8.1	8.6	8.2	8.5	8.1	8.4	8.2	8.32
CO (mg/m ³)	2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O ₃ (µg/m ³)	100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NH ₃ (µg/m ³)	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb (µg/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene - (DL 1 µg/m³); B(a)P - Benzo - a - pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory

Dr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purposes without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after revoking or issue of test report. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 16, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985555 Fax: 42985500 E-mail: lab@hcsa.in

G-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2404111, Email: kro@hcsa.in, Website: www.hcsa.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	04.10.2019
Report No	HECS/AA/003/041019

AMBIENT AIR QUALITY MONITORING: CONSOLIDATED TEST RESULTS - SEPTEMBER 2019

SEPTEMBER '19 - Week		37-Week		38-Week		39-Week		40-Week		41-Week	Avg. Value
Parameters	NAAQ	03.09.19	06.09.19	09.09.19	12.09.19	16.09.19	19.09.19	22.09.19	26.09.19	30.09.19	
PM _{2.5} (µg/m ³)	60	16.5	15.8	16.1	16.3	16.4	15.9	16.1	15.7	16.8	16.17
PM ₁₀ (µg/m ³)	100	36.8	35.3	34.8	36.5	36.6	35.5	36.2	35.1	35.7	35.83
SO ₂ (µg/m ³)	80	6.6	6.5	6.7	6.3	6.8	6.1	6.9	6.8	7.1	6.64
NO ₂ (µg/m ³)	80	7.9	7.3	7.8	7.5	7.7	7.6	7.8	7.5	7.7	7.64
CO (mg/m ³)	2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O ₃ (µg/m ³)	100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NH ₃ (µg/m ³)	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb (µg/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:PM₁₀ : 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)SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)NH₃ : 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)

C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)

B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂-Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃-Ozone (DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene-(DL 1 µg/m³); B(a)P- Benzo -α-pyrene (DL 0.5 ng/m³); ng/m³- nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory

(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 90 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 043.
Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 576011.
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	Premude Village
Report Date	04.10.2019
Report No	HECS/AA/004/041019

AMBIENT AIR QUALITY MONITORING: CONSOLIDATED TEST RESULTS - SEPTEMBER 2019

SEPTEMBER '19 - Week		37-Week		38-Week		39-Week		40-Week		41-Week	Avg. Value
Parameters	NAAQ	03.09.19	06.09.19	09.09.19	12.09.19	16.09.19	19.09.19	22.09.19	26.09.19	30.09.19	
PM _{2.5} (µg/m ³)	60	17.6	17.1	17.5	17.4	16.9	17.3	17.6	17.7	17.9	17.44
PM ₁₀ (µg/m ³)	100	35.6	35.8	34.5	32.6	33.8	35.2	35.6	35.1	35.5	34.85
SO ₂ (µg/m ³)	80	6.7	6.4	6.1	6.3	6.8	6.5	6.9	6.7	6.1	6.5
NO ₂ (µg/m ³)	80	7.9	7.7	7.3	7.8	7.5	7.6	7.3	7.7	6.9	7.52
CO (mg/m ³)	2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O ₃ (µg/m ³)	100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NH ₃ (µg/m ³)	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb (µg/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

- PM₁₀ : 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)
- SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
- NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
- O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
- NH₃ : 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)
- C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
- B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL = Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron; PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide (DL 0.1 ng/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P - Benzo - a-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory

(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 18 days from the date of issue of test report. 4. Under no circumstances HECS accepts any liability or loss/damage caused by use or misuse of test report after invoice/issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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	04.10.2019
Report No	HECS/AA/005/041019

AMBIENT AIR QUALITY MONITORING: CONSOLIDATED TEST RESULTS - SEPTEMBER 2019

SEPTEMBER '19 - Week		37-Week		38-Week		39-Week		40-Week		41-Week	Avg. Value
Parameters	NAAQ	03.09.19	06.09.19	09.09.19	12.09.19	16.09.19	19.09.19	22.09.19	26.09.19	30.09.19	
PM _{2.5} (µg/m ³)	60	16.6	16.4	16.9	16.1	15.8	16.3	15.5	16.5	16.9	16.33
PM ₁₀ (µg/m ³)	100	35.7	33.9	33.3	33.5	34.6	35.2	33.5	34.2	34.9	34.31
SO ₂ (µg/m ³)	80	6.7	6.9	6.8	6.4	6.5	6.6	6.7	7.1	6.9	6.73
NO ₂ (µg/m ³)	80	7.6	7.8	7.5	7.3	7.7	7.3	7.2	7.9	7.8	7.56
CO (mg/m ³)	2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O ₃ (µg/m ³)	100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NH ₃ (µg/m ³)	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb (µg/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As (ng/m ³)	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM_{2.5} : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC/FID/GC/MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron; PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene - (DL 1 µg/m³); B(a)P - Benzo - a - pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory

(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent of the organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invalidation or issue of test report. 5. The test results relate only to the test items. 6. It is not under scope of accreditation.

HECS/Q/FMT/50

ANNEXURE - B

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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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, Premude
Sample drawn by	HECS
Date of Sampling	06.09.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	06.09.2019
Date of Analysis start & completion	06.09.2019 & 12.09.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	16.09.2019
Report No	HECS/W/001/060919

GROUND WATER QUALITY MONITORING RESULTS

S.No.	Parametersmonitored	Test method followed	Units	Results	IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Pt -11) 1983	-	7.15	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	38.76	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	11.45	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	24.72	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	14.0	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	2.5	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	68.0	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	5.3	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.6	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt -31) 1978	mg/L	5.3	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	BDL (DL 0.02)	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



Authorized Signatory

(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss / damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/150

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985556 Fax: 42985500 E-mail: labsales@hecs.in

C-46, Industrial Estate, Balkampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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 Gagnet Labour Colony
Sample drawn by	HECS
Date of Sampling	06.09.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	06.09.2019
Date of Analysis start & completion	06.09.2019 & 12.09.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	16.09.2019
Report No	HECS/W/002/060919

GROUND WATER QUALITY MONITORING RESULTS

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	-	7.59	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	1	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	28.4	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	75.48	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	12.26	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	76.22	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	16.87	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	10.90	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	150	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	9.8	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.3	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt -31) 1978	mg/L	4.7	45 max
15.	Iron as Fe	IS 3025 (Pt -53) 2003	mg/L	0.14	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622 1981 (RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622 1981 (RA 2009)	Per 100mL	Absent	Not Detectable

Notes: 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

Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after involving or issuance of test report. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985556 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



Certificate No. YC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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	06.09.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	06.09.2019
Date of Analysis start & completion	06.09.2019 & 12.09.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	16.09.2019
Report No	HECS/W/003/060919

GROUND WATER QUALITY MONITORING RESULTS

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	-	7.67	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	1	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	25	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	71.4	500 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	11.44	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	76.22	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	17.17	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	10.41	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	148	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	9.46	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	4.6	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.3	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

Notes: 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



Authorized Signatory
(Dr K Ganeshan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss / damage caused by use or misuse of test report after having been issued. 5. The test results relate only to the test items. 6. A note under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.Q.: #18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42905555 Fax: 42905500 E-mail: labsales@hecs.in

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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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	23.09.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	24.09.2019
Date of Analysis start & completion	24.09.2019 & 30.09.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	04.10.2019
Report No	HECS/W/004/041019

GROUND WATER QUALITY MONITORING RESULTS

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	-	7.16	6.5-8.5
2.	Colour	IS 3025 (Pt-4) 1983	Hazen unit	1	15
3.	Turbidity	IS 3025 (Pt-10) 1984	NTU	2.3	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	64	600 max
7.	Calcium as Ca	IS 3025 (Pt-40) 1991	mg/L	11.22	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt-23) 1986	mg/L	57.68	200 max
9.	Chloride as Cl	IS 3025 (Pt-32) 1988	mg/L	27.79	1000 max
10.	Magnesium as Mg	IS 3025 (Pt-46) 1994	mg/L	8.74	100 max
11.	Total Dissolved Solids	IS 3025 (Pt-16) 1984	mg/L	120	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt-24) 1986	mg/L	15.63	400 max
13.	Fluoride	IS 3025 (Pt-60) 2008	mg/L	0.28	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt-31) 1978	mg/L	5.8	45 max
15.	Iron as Fe	IS3025 (Pt-53) 2003	mg/L	0.28	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



[Signature]

Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after involving or lapse of test report. 5. The test results are only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42965555 Fax: 42965500 E-mail: labsales@hecs.in

C-45, Industrial Estate, Bulakampady, Mangalore, Karnataka - 576011.
Ph: 0824 - 2408111, Email: krc@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

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

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	06.09.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	06.09.2019
Date of Analysis start & completion	06.09.2019 & 12.09.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	16.09.2019
Report No	HECS/W/005/060919

OPEN WELL WATER QUALITY MONITORING RESULTS

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	-	6.88	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	40.8	500 max
7.	Calcium as Ca	IS 3025 (Pt-40) 1991	mg/L	6.54	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt-23) 1986	mg/L	20.6	200 max
9.	Chloride as Cl	IS 3025 (Pt-32) 1988	mg/L	25.8	1000 max
10.	Magnesium as Mg	IS 3025 (Pt-46) 1994	mg/L	6.0	100 max
11.	Total Dissolved Solids	IS 3025 (Pt-16) 1984	mg/L	121	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt-24) 1986	mg/L	8.6	400 max
13.	Fluoride	IS 3025 (Pt-60) 2008	mg/L	0.26	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt-31) 1978	mg/L	4.8	45 max
15.	Iron as Fe	IS 3025 (Pt-53) 2003	mg/L	BDL (DL 0.02)	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Pt-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(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



[Signature]

Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/51

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42986555 Fax: 42985500 E-mail: labsales@hecs.in

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 576011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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	06.09.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	06.09.2019
Date of Analysis start & completion	06.09.2019 & 12.09.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	16.09.2019
Report No	HECS/W/006/060919

OPEN WELL WATER QUALITY MONITORING RESULTS

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	-	6.55	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen Unit	1	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	1.4	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	30.6	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	11.4	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	30.9	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	20.8	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	102	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	7.8	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.15	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt -31) 1978	mg/L	5.2	45 max
15.	Iron as Fe	IS 3025 (Pt -53) 2003	mg/L	0.09	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	<i>Escherichia coli</i>	IS 1622:1981(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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoking or issue of test report. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 093.

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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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 Premude Village
Sample drawn by	HECS
Date of Sampling	06.09.2019
Qty. of sample received	2 L In HDPE Can + 100 sterile container
Date of sample received	06.09.2019
Date of Analysis start & completion	06.09.2019 & 12.09.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	16.09.2019
Report No	HECS/W/007/060919

OPEN WELL WATER QUALITY MONITORING RESULTS

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	-	7.61	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	28.55	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	9.81	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	24.72	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	13.13	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	75	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	5.76	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.21	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt -31) 1978	mg/L	4.2	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	BDL(DL 0.02)	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



Authorized Signatory

(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances as lab accepts any liability or loss/damage caused by use or misuse of test report after invalidating or issuing of test report. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985555 Fax: 42985600 E-mail: lab@hcs.in

C-45, Industrial Estate, Eakkampady, Mangalore, Karnataka - 575011.

PH: 0824 - 2408111, Email: kro@hcs.in, Website: www.hcs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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	23.09.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	24.09.2019
Date of Analysis start & completion	24.09.2019 & 30.09.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	04.10.2019
Report No	HECS/W/008/230919

SURFACE WATER QUALITY MONITORING RESULTS

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	-	7.27	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	2	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	3.2	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	60	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	17.63	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	38.46	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	25.8	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	3.88	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	149	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	13.99	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.17	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt -31) 1978	mg/L	5.3	45 max
15.	Iron as Fe	IS 3025 (Pt -53) 2003	mg/L	0.24	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(R.aff 2009)	MPN/100mL	Absent	Not Detectable
18.	<i>Escherichia coli</i>	IS 1622:1981(R.aff 2009)	Per 100mL	Absent	Not Detectable

Note: BDL - Below Detection Limit; D.L - Detection Limit; NTU - Nephelometric Turbidity 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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or partial not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 18 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss / damage caused by use or mis use of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd 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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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	23.09.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	24.09.2019
Date of Analysis start & completion	24.09.2019 & 30.09.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	04.10.2019
Report No	HECS/W/009/230919

SURFACE WATER QUALITY MONITORING RESULTS

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	-	7.42	6.5-8.5
2.	Colour	IS 3025 (Pt-4) 1983	Hazen unit	2	15
3.	Turbidity	IS 3025 (Pt-10) 1984	NTU	2.3	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	44.0	600 max
7.	Calcium as Ca	IS 3025 (Pt-40) 1991	mg/L	8.0	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt-23) 1986	mg/L	19.2	200 max
9.	Chloride as Cl	IS 3025 (Pt-32) 1988	mg/L	15.8	1000 max
10.	Magnesium as Mg	IS 3025 (Pt-46) 1994	mg/L	5.8	100 max
11.	Total Dissolved Solids	IS 3025 (Pt-16) 1984	mg/L	66.0	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt-24) 1986	mg/L	6.5	400 max
13.	Fluoride	IS 3025 (Pt-60) 2008	mg/L	0.12	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt-31) 1978	mg/L	5.1	45 max
15.	Iron as Fe	IS 3025 (Pt-53) 2003	mg/L	0.26	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Pt-52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Notes: 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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: tabsales@hecs.in

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



Certificate No. TC-5788

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

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	06.09.2019
Report Date	01.10.2019
Report No.	HECS/N/001/011019

NOISE MONITORING - SEPTEMBER 2019 RESULTS

S.No.	Sampling Location	MoEFCC requirements in dB		Avg. Noise level observed in dB	
		Day	Night	Day	Night
1.	OMPL-North	75	70	62.8	55.1
2.	OMPL-South			61.3	56.3
3.	OMPL-East			61.9	53.9
4.	OMPL-West			63.6	56.4

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 *****



Authorized Signatory
(Dr K 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 - 576011.

PIN: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in



CERTIFICATE TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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	06.09.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	06.09.2019
Date of Analysis start & completion	06.09.2019 & 14.09.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	16.09.2019
Report No	HECS/WW/002/060919

GUARD POND PUMP DISCHARGE (ETP EFFLUENT) RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
1.	Color	IS 3025 (Pt 4):1983(RA 2006)	Hazen Units	Colourless	All efforts should be made to remove colour and unpleasant odour as far as practicable
2.	Odour	IS 3025 (Pt 5):1983, RA 2006	-	Disagreeable	
3.	Total Suspended Solids	2540D APHA 22nd Edn., 2012	mg/L	66.4	100
4.	pH	IS 3025 (Pt 11):1983(RA 2006)	-	6.75	6.0-8.5
5.	Temperature	IS 3025 (Pt 9):1983(RA:2006)	°C	30	Shall not exceed 5 degree Centigrade above the receiving water temperature
6.	Oil & Grease	IS 3025, 4(Pt 39):2000 (RA 2009)	mg/L	2.0	5
7.	Total Residual Chlorine as Cl ₂	IS 3025 (Pt 26):1986(RA 2009)	mg/L	BDL (DL 0.1)	1
8.	Ammonical Nitrogen as N	IS 3025 Pt (34):1988	mg/L	5.1	50
9.	Total Kjeldhal Nitrogen as N	IS 3025 Pt (34):1988	mg/L	24.2	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	BDL (DL 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(Pt 52):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



Authorized Signatory

(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after revoking or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: #15, 92nd Street, Ashok Nagar, Chennai - 600 083.
 Ph: 42985555 Fax: 42986500 E-mail: labsales@hecs.in

G-45, Industrial Estate, Ballampady, Mangalore, Karnataka - 575011.
 Ph: 0824 - 2406111, Email: krc@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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	06.09.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	06.09.2019
Date of Analysis start & completion	06.09.2019 & 14.09.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	16.09.2019
Report No	HECS/WW/002/060919

GUARD POND PUMP DISCHARGE (ETP EFFLUENT) RESULTS

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 22nd 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	2.7	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; DL- Detection Limit; mg/L - Milligrams per liter

CONCLUSION: ETP OUTLET EFFLUENT WATER AS ABOVE PARAMETERS ARE WITHIN STANDARDS

End of Report



Authorized Signatory

(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 16 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invaliding or issue of test report. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

HECS/QMNT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 12nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42585566 Fax: 42585500 E-mail: labsales@hecs.in

C-45, Industrial Estate, Balkampady, Mangalore, Kamalaka - 575011.
Ph: 0824 - 2404111, 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	23.09.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	24.09.2019
Date of Analysis start & completion	24.09.2019 & 01.10.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	04.10.2019
Report No	HECS/VV/006/230919

GUARD POND PUMP DISCHARGE (ETP EFFLUENT) RESULTS

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
1.	Color	IS 3025 (Pt 4):1983(RA 2006)	Hazen Units	Colourless	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 22nd Edn.. 2012	mg/L	BDL (DL 4)	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	28	Shall not exceed 5 degree Centigrade above the receiving water temperature
6.	Oil & Grease	IS 3025,4(Pt 39):2000 (RA 2009)	mg/L	4	5
7.	Total Residual Chlorine as Cl ₂	IS 3025 (Pt 26):1986(RA 2009)	mg/L	BDL (DL 0.1)	1
8.	Ammonical Nitrogen as N	IS 3025 Pt (34):1988	mg/L	6.5	50
9.	Total Kjeldhal Nitrogen as N	IS 3025 Pt (34):1988	mg/L	30.2	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	10	30
12.	COD as O ₂	IS 3025 Pt (58):2006	mg/L	24.2	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(Pt 52):2003 (RA 2009)	mg/L	BDL (DL 0.01)	2.0
16.	Copper as Cu	IS 3025 S ₁ (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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss / damage caused by use or misuse of test report after involving or issue of test report. 5. The test results relate only to the test items. 6. It is not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 10, 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



Certificate No. TC-5788

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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	23.09.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	24.09.2019
Date of Analysis start & completion	24.09.2019 & 01.10.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	04.10.2019
Report No	HECS/WW/006/230919

GUARD POND PUMP DISCHARGE (ETP EFFLUENT) RESULTS

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 22nd 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 C ₆ H ₅ OH	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	0.06	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 EFFLUENT WATER AS ABOVE PARAMETERS ARE WITHIN STANDARDS

End of Report



Authorized Signatory

(Dr. K. Ganeshan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by Hubert Enviro Care Systems (P) Ltd. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invalidating or expiry of test report. 5. The test results are only for the test items. 6. If not under scope of accreditation.

HECS/Q/INT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985566 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

ANNEXURE - E



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

Page No. 1 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Perumde Village, Mangalore-574509, Karnataka, India.
Stack ID	NHT Charge Heater
Sample Description	Manual Stack Emission Monitoring
Sampling Date	24.09.2019
Sample Receipt	25.09.2019
Equipment Used	Vayubodhan VSS1
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	05.10.2019
Report No	HECS-OMPL/SEM/001/250919

RESULTS OF EMISSION AIR FROM STACK/ CHIMNEY MONITORING - SEPTEMBER 2019

General Details	
Ambient Temperature (°C)	30
Stack Diameter (m)	1.96
Stack Height (m)	65
Stack Temperature (°C)	231
Flue Gas Velocity (m/s)	7.2
Flue gas flow rate (LPM)	13.58

Parameter monitored	Protocol	Results (mg/Nm ³)	Standard Norms (mg/Nm ³)
SPM	IS 11255 (Part 1)-1985	3.0	5
Sulphur Dioxide (SO ₂)	IS 11255 (Part 3)-1985	41.8	50
Oxides of Nitrogen (NO _x)	IS 11255 (Part 7)-2005	73	250
Carbon monoxide (CO)	IS 5182 (Part 10)-1999	BDL (DL 1)	100

Note: mg/Nm³: milligram per normal cubic meter; SPM: Suspended Particulate Matter; LPM- Litre per minute
m/s - Meter per second; Nm³/hr - Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS




(Dr K GANESAN)
Authorized Signatory

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances shall accept any liability or loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test item. 6. If not under scope of accreditation.

HECS/Q/PMT/50

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.

Pin: 0624 - 2408111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5788

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT

Page No. 2 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the industry	Mangalore SEZ, Perumde Village, Mangalore-574509, Karnataka, India.
Stack ID	Isomer Charge Heater
Sample Description	Manual Stack Emission Monitoring
Sampling Date	27.09.2019
Sample Receipt	28.09.2019
Equipment Used	Vayubodhan VSS1
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	05.10.2019
Report No	HECS-OMPL/SEM/002/280919

RESULTS OF EMISSION AIR FROM STACK/ CHIMNEY MONITORING - SEPTEMBER 2019

General Details	
Ambient Temperature (°C)	30
Stack Diameter (m)	2.4
Stack Height (m)	66
Stack Temperature (°C)	162
Flue Gas Velocity (m/s)	3.3
Flue gas flow rate (LPM)	14.05

Parameter monitored	Protocol	Results(mg/Nm ³)	Standard Norms(mg/Nm ³)
SPM	IS 11255(Part 1)-1985	4.1	5
Sulphur Dioxide(SO ₂)	IS 11255(Part 3)-1985	27.6	50
Oxides of Nitrogen (NO _x)	IS 11255(Part 7)-2005	185.8	250
Carbon monoxide (CO)	IS 5182(Part 10)-1999	BDL (DL 1)	100

Note: mg/Nm³: milligram per normal cubic meter; SPM: Suspended Particulate Matter; LPM- Litre per minute
m/s – Meter per second; Nm³/hr – Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS

(Dr. K GANESAN)

Authorized Signatory

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. Report under scope of accreditation.

HECS/Q/FMT/50

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

Certificate No. TC-5785

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

Page No. 3 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Permude Village, Mangalore-574509, Karnataka, India.
Stack ID	CPP (GTG-HRSG) - 1
Sample Description	Manual Stack Emission Monitoring
Sampling Date	01.10.2019
Sample Receipt	03.10.2019
Equipment Used	Vayubodhan VSS1
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	05.10.2019
Report No	HECS-OMPL/SEM/003/031019

RESULTS OF EMISSION AIR FROM STACK/ CHIMNEY MONITORING - SEPTEMBER 2019

General Details	
Ambient Temperature (°C)	31
Stack Diameter (m)	2.9
Stack Height (m)	70
Stack Temperature (°C)	173
Flue Gas Velocity (m/s)	4.4
Flue gas flow rate (LPM)	18.77

Parameter monitored	Protocol	Results(mg/Nm ³)	Standard Norms(mg/Nm ³)
SPM	IS 11255(Part 1)-1985	16.1	50
Sulphur Dioxide (SO ₂)	IS 11255(Part 3)-1985	149.3	850
Oxides of Nitrogen (NO _x)	IS 11255(Part 7)-2005	212	350
Carbon monoxide (CO)	IS 5182(Part 10)-1999	BDL (DL 1)	150

Note: mg/Nm³ : milligram per normal cubic meter; SPM: Suspended Particulate Matter; LPM- Litre per minute
m/s - Meter per second; Nm³/hr - Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS


(Dr K GANESAN)
Authorized Signatory

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoking or issue of test report. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985555 Fax: 42985500 E-mail: lab@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

Page No. 4 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Perumde Village, Mangalore-574509, Karnataka, India.
Stack ID	Plat former Unit Charge Heater
Sample Description	Manual Stack Emission Monitoring
Sampling Date	24.09.2019
Sample Receipt	25.09.2019
Equipment Used	Vayubodhan VSS1
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	05.10.2019
Report No	HECS-OMPL/SEM/004/250919

RESULTS OF EMISSION AIR FROM STACK/ CHIMNEY MONITORING - SEPTEMBER 2019

General Details	
Ambient Temperature (°C)	30
Stack Diameter (m)	4.2
Stack Height (m)	95
Stack Temperature (°C)	182
Flue Gas Velocity (m/s)	5.6
Flue gas flow rate (LPM)	12.28

Parameter monitored	Protocol	Results(mg/Nm ³)	Standard Norms(mg/Nm ³)
SPM	IS 11255(Part 1)-1985	3.5	5
Sulphur Dioxide (SO ₂)	IS 11255(Part 3)-1985	38.2	50
Oxides of Nitrogen(NO _x)	IS 11255(Part 7)-2005	129	250
Carbon monoxide (CO)	IS 5182(Part 10)-1999	BDL (DL 1)	100

Note: mg/Nm³ : milligram per normal cubic meter; SPM: Suspended Particulate Matter; LPM- Litre per minute
m/s – Meter per second; Nm³/hr – Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS,

(Dr K GANESAN)

Authorized Signatory

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985555 Fax: 42985800 E-mail: labsales@hecs.in

C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2406111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT

Page No. 5 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Permude Village, Mangalore-574509, Karnataka, India.
Stack ID	Tatory Charge Heater
Sample Description	Manual Stack Emission Monitoring
Sampling Date	26.09.2019
Sample Receipt	27.09.2019
Equipment Used	Vayubodhan V551
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	05.10.2019
Report No	HECS-OMPL/SEM/005/270919

RESULTS OF EMISSION AIR FROM STACK/ CHIMNEY MONITORING - SEPTEMBER 2019

General Details	
Ambient Temperature (°C)	30
Stack Diameter (m)	1.75
Stack Height (m)	65
Stack Temperature (°C)	167
Flue Gas Velocity (m/s)	3
Flue gas flow rate (LPM)	12.71

Parameter monitored	Protocol	Results (mg/Nm ³)	Standard Norms (mg/Nm ³)
SPM	IS 11255(Part 1)-1985	2.8	5
Sulphur Dioxide(SO ₂)	IS 11255(Part 3)-1985	21.2	50
Oxides of Nitrogen(NO _x)	IS 11255(Part 7)-2005	187	250
Carbon monoxide (CO)	IS 5182(Part 10)-1999	BDL (DL1)	100

Note: mg/Nm³: milligram per normal cubic meter; SPM: Suspended Particulate Matter; LPM- Litre per minute
m/s – Meter per second; Nm³/hr – Normal cubic meter per hour

INFERENCE: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS

(Dr K GANESAN)
Authorized Signatory

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in

C-46, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5788

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT

Page No. 6 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Permude Village, Mangalore-574509, Karnataka, India.
Stack ID	Xylene Column Reboiler Heater (Part A)
Sample Description	Manual Stack Emission Monitoring
Sampling Date	30.09.2019
Sample Receipt	01.10.2019
Equipment Used	Vayubodhan VSS1
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	05.10.2019
Report No	HECS-OMPL/SEM/005/011019

RESULTS OF EMISSION AIR FROM STACK/ CHIMNEY MONITORING - SEPTEMBER 2019

General Details	
Ambient Temperature (°C)	31
Stack Diameter (m)	3.69
Stack Height (m)	98
Stack Temperature (°C)	170
Flue Gas Velocity (m/s)	3.4
Flue gas flow rate (LPM)	14.55

Parameter monitored	Protocol	Results (mg/Nm ³)	Standard Norms (mg/Nm ³)
SPM	IS 11255 (Part 1)-1985	4.06	50
Sulphur Dioxide(SO ₂)	IS 11255 (Part 3)-1985	21.1	850
Oxides of Nitrogen(NO _x)	IS 11255 (Part 7)-2005	59.9	350
Carbon monoxide (CO)	IS 5182 (Part 10)-1999	BDL (DL 1)	150

Note: mg/Nm³: milligram per normal cubic meter; SPM: Suspended Particulate Matter; LPM- Litre per minute
m/s – Meter per second; Nm³/hr – Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS



[Signature]
(Dr K GANESAN)
Authorized Signatory

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 - 576011.
 Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT

Page No. 7 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Permude Village, Mangalore-574509, Karnataka, India.
Stack ID	Xylene Column Reboiler Heater (Part B)
Sample Description	Manual Stack Emission Monitoring
Sampling Date	30.09.2019
Sample Receipt	01.10.2019
Equipment Used	Vayubodhan VSS1
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	05.10.2019
Report No	HECS-OMPL/SEM/007/Q11019

RESULTS OF EMISSION AIR FROM STACK/ CHIMNEY MONITORING - SEPTEMBER 2019

General Details	
Ambient Temperature (°C)	31
Stack Diameter (m)	3.69
Stack Height (m)	98
Stack Temperature (°C)	170
Flue Gas Velocity (m/s)	2.9
Flue gas flow rate (LPM)	12.48

Parameter monitored	Protocol	Results (mg/Nm ³)	Standard Norms (mg/Nm ³)
SPM	IS 11255 (Part 1)-1985	4.79	50
Sulphur Dioxide (SO ₂)	IS 11255 (Part 3)-1985	18.3	850
Oxides of Nitrogen (NO _x)	IS 11255 (Part 7)-2005	55.8	350
Carbon monoxide (CO)	IS 5182 (Part 10)-1999	BDL (DL 1)	150

Note: mg/Nm³: milligram per normal cubic meter; SPM: Suspended Particulate Matter; LPM- Litre per minute
 m/s – Meter per second; Nm³/hr – Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS



(Signature)
 (Dr K GANESAN)
 Authorized Signatory

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 10 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after the validity or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985553 Fax : 42985500 E-mail : lab@hecs.in

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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

TEST REPORT

Page No. 8 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Permude Village, Mangalore-574509, Karnataka, India.
Stack ID	BTF (Toluene Column Reboiler Heater)
Sample Description	Manual Stack Emission Monitoring
Sampling Date	27.09.2019
Sample Receipt	28.09.2019
Equipment Used	Vayubodhan VSS1
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	05.10.2019
Report No	HECS-OMPL/SEM/008/280919

RESULTS OF EMISSION AIR FROM STACK/ CHIMNEY MONITORING - SEPTEMBER 2019

General Details	
Ambient Temperature (°C)	30
Stack Diameter (m)	3.29
Stack Height (m)	80
Stack Temperature (°C)	191
Flue Gas Velocity (m/s)	3.4
Flue gas flow rate (LPM)	14.52

Parameter monitored	Protocol	Results (mg/Nm ³)	Standard Norms (mg/Nm ³)
SPM	IS 11255(Part 1)-1985	3.8	50
Sulphur Dioxide(SO ₂)	IS 11255(Part 3)-1985	11.21	850
Oxides of Nitrogen(NO _x)	IS 11255(Part 7)-2005	37.6	350
Carbon monoxide (CO)	IS 5182(Part 10)-1999	BDL (DL 1)	150

Note: mg/Nm³ : milligram per normal cubic meter; SPM: Suspended Particulate Matter; LPM- Litre per minute
m/s – Meter per second; Nm³/hr – Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS




(Dr. K. GANESAN)
Authorized Signatory

1. This report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 18 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss / damage caused by use or misuse of test report after/involving or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd Street, Ashok Nagar, Chennai - 600 083.
 Ph: 42985555 Fax : 42986600 E-mail : labsales@hecs.in

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



Certificate No. TC-5786

Laboratory Services Division

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

TEST REPORT

Page No. 9 of 9

Name of the Industry	M/s ONGC Mangalore Petrochemicals Limited
Address of the Industry	Mangalore SEZ, Permude Village, Mangalore-574509, Karnataka, India.
Stack ID	CPP-Utility Boiler
Sample Description	Manual Stack Emission Monitoring
Sampling Date	01.10.2019
Sample Receipt	03.10.2019
Equipment Used	Vayubodhan YSS1
Method of Sampling & Analysis	IS 11255:1995 Methods for Measurement of Emission from Stationary Sources
Sample Drawn by	Hubert Enviro Care Systems (P) Ltd
Report Date	05.10.2019
Report No	HECS-OMPL/SEM/009/031019

RESULTS OF EMISSION AIR FROM STACK/ CHIMNEY MONITORING - SEPTEMBER 2019

General Details	
Ambient Temperature (°C)	31
Stack Diameter (m)	2.9
Stack Height (m)	70
Stack Temperature (°C)	182
Flue Gas Velocity (m/s)	4.2
Flue gas flow rate (LPM)	18.23

Parameter monitored	Protocol	Results(mg/Nm ³)	Standard Norms(mg/Nm ³)
SPM	IS 11255(Part 1)-1985	9.1	50
Sulphur Dioxide (SO ₂)	IS 11255(Part 3)-1985	131.6	850
Oxides of Nitrogen (NO _x)	IS 11255(Part 7)-2005	149	350
Carbon monoxide (CO)	IS 5182(Part 10)-1999	BDL (DL 1)	150

Note: mg/Nm³ : milligram per normal cubic meter; SPM: Suspended Particulate Matter; LPM- Litre per minute
 m/s - Meter per second; Nm³/hr - Normal cubic meter per hour

Inference: - STACK EMISSIONS AS ABOVE PARAMETERS ARE WITHIN STANDARDS



(Signature)
 (Dr K GANESAN)
 Authorized Signatory

ANNEXURE - F

Form-1 (Rule 4)
Returns Regarding Water Consumed during the Month of August, 2019

Name and address of the Consumer	Purpose for which water consumed	Reading at the beginning 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 Liters	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, Perumde, Mangalore -574 509	Industrial cooling, spraying in inline pits or boiler feed						
	Cooling Water	0	68923	68923			
	Boiler Feed Water	0	67481	67481			
	Fire Water	0	53225	53225			
	Domestic purpose						
	Drinking Water & Sanitation	0	3374	3374			
	Processing whereby water gets polluted and the pollutants are easily bio-degradable						
Service Water			3874	3874			
Total Consumption				1,96,877			

Signature of the Consumer : 
Name : Shivaprakash, Sr. Manager(Env)

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

ANNEXURE -G

ONGC Mangalore Petrochemicals Limited

Production Details for September, 2019

Net Naptha Processed – 1,14,812 MT

Sl. No.	Name of the Product	Quantity, MT
1	Paraxylene (Product)	62,730
2	Benzene (Co product)	15,025

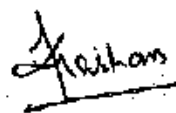
ANNEXURE - I

P 1 of 2

FORM - 10

[See Rule 19 (I)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	ONGC Mangalore petrochemical ltd Mangalore. SEZ Unit perumukle village Mangalore																		
2.	Sender's authorisation No.	DCM/HWM/SEO/H.D/Reg No 3085690																		
3.	Manifest Document No.	349																		
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9980027668																		
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)																		
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013																		
7.	Vehicle Registration No.	KA 53B6587																		
8.	Receiver's name and mailing address (including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128 Mob : 8861488860 / 70 e-mail : centurydrum@gmail.com																		
9.	Receiver's authorisation No.	No: PCB / WMC / 601 / HWM / 2016 / OB - 576 - Date : 31-8-2018																		
10.	Waste Description	Empty Carboys (used packing Material)																		
11.	Total quantity No. of Containers	 m ³ or MT 600 Nos.																		
12.	Physical form	(Solid / Semi solid / Sludge / Oily / Tarry / Slurry)																		
13.	Special handling instruction and additional information																			
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.																		
	Name and stamp :  Signature : 	<table border="1"> <thead> <tr> <th colspan="2">Month</th> <th colspan="2">Day</th> <th colspan="2">Year</th> </tr> </thead> <tbody> <tr> <td>0</td><td>8</td> <td>3</td><td>0</td> <td>2</td><td>0</td> </tr> <tr> <td>1</td><td>9</td> <td></td><td></td> <td></td><td></td> </tr> </tbody> </table>	Month		Day		Year		0	8	3	0	2	0	1	9				
Month		Day		Year																
0	8	3	0	2	0															
1	9																			
	Transporter acknowledgment of receipt of Wastes																			
15.	Name and stamp CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128 Signature	<table border="1"> <thead> <tr> <th colspan="2">Month</th> <th colspan="2">Day</th> <th colspan="2">Year</th> </tr> </thead> <tbody> <tr> <td>0</td><td>8</td> <td>3</td><td>0</td> <td>2</td><td>0</td> </tr> <tr> <td>1</td><td>9</td> <td></td><td></td> <td></td><td></td> </tr> </tbody> </table>	Month		Day		Year		0	8	3	0	2	0	1	9				
Month		Day		Year																
0	8	3	0	2	0															
1	9																			
16.	Receiver's certification for receipt of hazardous and other waste Name and stamp :  Signature :  	<table border="1"> <thead> <tr> <th colspan="2">Month</th> <th colspan="2">Day</th> <th colspan="2">Year</th> </tr> </thead> <tbody> <tr> <td>0</td><td>8</td> <td>3</td><td>0</td> <td>2</td><td>0</td> </tr> <tr> <td>1</td><td>9</td> <td></td><td></td> <td></td><td></td> </tr> </tbody> </table>	Month		Day		Year		0	8	3	0	2	0	1	9				
Month		Day		Year																
0	8	3	0	2	0															
1	9																			

Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board after signing of all seven copies
Copy2 (Yellow) : To be retained by the sender after taking signature after from the transporter and the rest of the
signed copies to be carried by the transporter
Copy3 (Pink) : To be retained by the receiver (actual user or treatment storage and disposal facility operator)
after receiving the waste and the remaining four copies are to be duly signed by the receiver

Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting waste
Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board
Copy6 (Blue) : To be sent by the receiver to the sender
Copy7 (Grey) : To be sent by the receiver to the State Pollution Control Board
of the sender in case the sender is in another State

FORM - 10
[See Rule 19 (I)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's Name and Mailing Address (Including Phone No. & e-mail)	OMC HANGHORE Petrochemical Ltd Mangalore SS2 Unit Perumde Village Mangalore
2.	Sender's authorisation No.	DCB/HWM/SEO/H.D/Reg No 3085690
3.	Manifest Document No.	312
4.	Transporters Name & Address (Including Phone No. & e-mail)	Century Drums & Barrels Industries, Tumkur. OWN TRANSPORT Mob : 9980027668
5.	Type of vehicle	(Truck/Tanker/Special Vehicle)
6.	Transporter's Registration No.	PCB/SEO/WMC/2013-HD Reg. No. 212 Date-12-4-2013
7.	Vehicle Registration No.	KA 06 D 4254
8.	Receiver's name and mailing address (including Phone No. and e-mail)	CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128 Mob : 8861488860 / 70 e-mail : centurydrum@gmail.com
9.	Receiver's authorisation No.	No.: PCB / WMC / 601 / HWM / 2016 / OB - 576 - Date : 31-8-2016
10.	Waste Description	Empty Cozboys Cans Packig material
11.	Total quantity No. of Containers	 m ³ or MT 705 Nos.
12.	Physical form	(Solid / Semi solid / Sludge / Oily / Tarry / Slurry)
13.	Special handing instruction and additional information	
14.	Sender's Certification	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked, and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.
	 Name and stamp :	 Signature
	Transporter acknowledgment of receipt of Wastes	Month Day Year 07 16 2019
15.	Name and stamp CENTURY DRUMS & BARRELS INDUSTRIES Plot No. 161-B, Road No. 31, KIADB, 1st Phase, Vasantha Narasapura Industrial Area, TUMKUR-572128	 Month Day Year 07 16 2019
16.	Receiver's certification for receipt to hazardous and other waste Name and stamp :	 Month Day Year 07 16 2019

Copy1 (White) : To be forwarded by the sender to the State Pollution Control Board after taking signature of the transporter
Copy2 (Yellow) : To be retained by the sender after taking signature after from the transporter and the rest of the signed copies to be carried by the transporter
Copy3 (Pink) : To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver

Copy4 (Orange) : To be handed over to the transporter by the receiver after accepting waste
Copy5 (Green) : To be sent by the receiver to the State Pollution Control Board
Copy6 (Blue) : To be sent by the receiver to the sender
Copy7 (Gray) : To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State



ओ एन जी सी मंगलूर पेट्रोकेमिकल्स लिमिटेड

(मंगलूर रिफाइनरी एण्ड पेट्रोकेमिकल्स लिमिटेड की सहायक कंपनी)

ONGC Mangalore Petrochemicals Ltd.

(A Subsidiary of Mangalore Refinery & Petrochemicals Ltd.)

एमएसईजेड पेरुदे, मंगलूर - 574 509 MSEZ, Pernude, Mangaluru - 574 509.

CIN : U40107KA2008GOI041258 दूरभाष Direct Line: 0824-2872000, फैक्स Fax: 0824-2872008, Website: www.ompl.co.in

REF: OMPL/PCB/HRP/2019-20/

Date: 25/11/2019

To:

The Environmental Officer
Regional Office
KSPCB
Balkampady, Mangalore-11

Mangalore SEZ Ltd. - 5555
Documents & Contents subject to verification
Received date: 04.12.2019
Received by: V. Shetty

Dear Sir,

Sub: Submission of Environmental Monitoring Report for the Month of October, 2019.

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, 2019 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. SO2 Report as Annexure-E
6. Returns Regarding Water Consumed, for the Month of October, 2019, as Annexure-F
7. Production Report as Annexure-G.

Thanking You

Ramakantha Prabhu
Chief Manager (EN)

CC: Member Secretary, KSPCB, Bangalore

CC: Head (Technical), MSEZ

CC: CEO, OMPL for info

CC: COO, OMPL for info.

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42986555 Fax: 42986500 E-mail: labsales@hecs.in

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



Certificate No. TC-5786

ANNEXURE - A

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

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	02.11.2019
Report No	HECS/AA/001/021119

AMBIENT AIR QUALITY MONITORING: CONSOLIDATED TEST RESULTS - OCTOBER 2019

OCTOBER '19 - Week		42-Week		43-Week		44-Week		45-Week		Avg. Value
Parameters	NAAQ	03.10.19	09.10.19	11.10.19	14.10.19	17.10.19	24.10.19	28.10.19	31.10.19	
PM _{2.5} (µg/m ³)	60	14.3	13.8	13.1	13.5	13.2	12.3	12.1	12.1	13.05
PM ₁₀ (µg/m ³)	100	37.4	36.8	33.5	34.2	34.1	32.4	31.8	28.4	33.58
SO ₂ (µg/m ³)	80	5.9	6.8	7.1	6.9	7.6	6.7	6.4	7.2	6.8
NO ₂ (µg/m ³)	80	8.4	8.7	8.5	7.8	8.2	7.5	8.1	8.4	8.2
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(a)P (µg/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL =Below detection limit; DL - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Mikron, PM₁₀-Particulate matter size less than 10 Mikron; SO₂Sulphur dioxide; NO₂- Nitrogen-di-oxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃-Ozone (DL 10 µg/m³); NH₃-Ammonia (DL 5 µg/m³); Pb-Lead (DL 0.05 µg/m³); As-Arsenic (DL 0.1 ng/m³); Ni-Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P- Benzo -α-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS or its authorized representative. 2. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 3. Under no circumstances lab accepts any liability for loss or damage caused by use or misuse of test report after invalidating or issue of test report. 4. The test results are valid only for the test items. 5. If not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42965555 Fax: 42988600 E-mail: labsales@hecs.in

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



Certificate No. TC-8788

Laboratory Services Division

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

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	Shantigudde
Report Date	02.11.2019
Report No	HECS/AA/002/021119

AMBIENT AIR QUALITY MONITORING: CONSOLIDATED TEST RESULTS - OCTOBER 2019

OCTOBER '19 - Week		42-Week		43-Week		44-Week		45-Week		Avg. Value
Parameters	NAAQ	03.10.19	09.10.19	11.10.19	14.10.19	17.10.19	24.10.19	28.10.19	31.10.19	
PM _{2.5} (µg/m ³)	60	14.1	13.8	13.9	14.5	13.8	12.1	11.7	14.3	13.52
PM ₁₀ (µg/m ³)	100	35.8	36.3	34.4	33.7	35.5	29.9	32.1	33.4	33.89
SO ₂ (µg/m ³)	80	6.8	6.4	6.5	6.8	6.7	6.4	6.9	6.3	6.6
NO ₂ (µg/m ³)	80	8.1	8.5	8.4	8.3	8.1	7.7	7.9	8.1	8.13
CO (mg/m ³)	2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
O ₃ (µg/m ³)	180	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(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/ GC MS based on IS 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene - (DL 1 µg/m³); B(a)P - Benzo - a-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent of Hubert Enviro Care Systems (P) Ltd. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability for loss/damage caused by use or misuse of test report after its issue or after the date of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

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 - 2408411, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

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

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	02.11.2019
Report No	HECS/AA/003/021119

AMBIENT AIR QUALITY MONITORING: CONSOLIDATED TEST RESULTS - OCTOBER 2019

OCTOBER '19 - Week		42-Week		43-Week		44-Week		45-Week		Avg. Value
Parameters	NAAQ	03.10.19	09.10.19	11.10.19	14.10.19	17.10.19	24.10.19	28.10.19	31.10.19	
PM _{2.5} (µg/m ³)	60	16.9	15.5	16.5	17.1	16.3	15.9	13.4	13.5	15.63
PM ₁₀ (µg/m ³)	100	35.7	38.7	32.4	37.8	37.9	32.4	27.3	28.9	33.89
SO ₂ (µg/m ³)	80	6.3	6.5	6.8	6.4	6.7	6.8	6.5	6.7	6.59
NO ₂ (µg/m ³)	80	7.6	7.1	7.9	7.5	7.2	7.5	6.8	6.5	7.26
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(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC/FID/ GC/MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-dioxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene (DL 1 µg/m³); B(a)P - Benzo - a-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 7 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after involving or use of test report. 5. The test results are valid only for the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 800 083.
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



Certificate No. TC-5788

Laboratory Services Division

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

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	Premude Village
Report Date	02.11.2019
Report No	HECS/AA/004/021119

AMBIENT AIR QUALITY MONITORING: CONSOLIDATED TEST RESULTS - OCTOBER 2019

OCTOBER '19 - Week		42-Week		43-Week		44-Week		45-Week		Avg. Value
Parameters	NAAQS	03.10.19	09.10.19	11.10.19	14.10.19	17.10.19	24.10.19	28.10.19	31.10.19	
PM _{2.5} (µg/m ³)	60	17.9	17.3	17.2	17.5	17.4	17.8	15.4	14.9	16.92
PM ₁₀ (µg/m ³)	100	36.2	35.8	35.1	35.4	36.1	29.6	24.8	25.9	32.96
SO ₂ (µg/m ³)	80	6.9	6.3	6.5	6.4	6.7	6.4	6.1	6.2	6.43
NO ₂ (µg/m ³)	80	7.5	7.8	7.4	7.7	7.6	7.5	6.5	6.8	7.35
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(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM₁₀ : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2011)

Note: BDL = Below detection limit; DL - Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron, PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene - (DL 1 µg/m³); B(a)P - Benzo - a - pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS.

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



Authorized Signatory
Dr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS. 2. Samples are not drawn by HECS unless or otherwise mandated. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability for errors/damage caused by use or misuse of test report after involving or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 19, 82nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

C-43, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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	02.11.2019
Report No	HECS/AA/005/021119

AMBIENT AIR QUALITY MONITORING: CONSOLIDATED TEST RESULTS - OCTOBER 2019

OCTOBER '19 - Week		42-Week		43-Week		44-Week		45-Week		Avg. Value
Parameters	NAAQ	03.10.19	09.10.19	11.10.19	14.10.19	17.10.19	24.10.19	28.10.19	31.10.19	
PM _{2.5} (µg/m ³)	60	16.9	17.0	16.4	16.5	16.7	16.8	13.8	14.1	16.02
PM ₁₀ (µg/m ³)	100	37.8	36.5	37.3	35.8	36.7	35.5	28.6	29.1	34.67
SO ₂ (µg/m ³)	80	6.8	6.5	7.1	6.4	6.9	7.2	6.2	6.1	6.65
NO ₂ (µg/m ³)	80	7.4	7.8	7.6	7.5	7.2	7.7	6.8	6.5	7.3
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(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Test Methods Followed:

PM_{2.5} : 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)
SO₂ : IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method)
NO₂ : IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method)
O₃ : HECS/AIR/SOP/005 Issue 02 dt. 13.06.2018 based on CPCB guidelines vol. I (2011)
NH₃ : 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)
C₆H₆ : GC FID/ GC MS based on IS: 5182 (Pt 11) based on CPCB guidelines vol. I (2011)
B(a)P : In-house validated method based on CPCB guidelines vol. I (2012)

Note: BDL = Below detection limit; DL = Detection Limit; PM_{2.5} - Particulate matter size less than 2.5 Micron; PM₁₀ - Particulate matter size less than 10 Micron; SO₂ - Sulphur dioxide; NO₂ - Nitrogen-di-oxide; CO - Carbon Mono Oxide (DL 0.1 mg/m³); O₃ - Ozone (DL 10 µg/m³); NH₃ - Ammonia (DL 5 µg/m³); Pb - Lead (DL 0.05 µg/m³); As - Arsenic (DL 0.1 ng/m³); Ni - Nickel (DL 0.5 ng/m³); Benzene - (DL 1 µg/m³); B(a)P - Benzo - α-pyrene (DL 0.5 ng/m³); ng/m³ - nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

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



Authorized Signatory

Dr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent of HECSS organization. 2. Samples are not drawn by HECSS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by user or misuse of test report after invoking or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

ANNEXURE-B

Hubert Enviro Care Systems (P) Ltd.H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.inC-45, Industrial Estate, Belkandpady, Mangalore, Karnataka - 576011.
Ph: 0824 - 2406111, Email: kro@hecs.in, Website: www.hecs.in

Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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, Premude
Sample drawn by	HECS
Date of Sampling	03.10.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	04.10.2019
Date of Analysis start & completion	04.10.2019 & 09.10.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	30.10.2019
Report No	HECS/W/001/041019

GROUND WATER QUALITY MONITORING RESULTS - OCTOBER 2019

S.No.	Parameters monitored	Test method followed	Units	Results	IS10500:2012 Permissible Limit
1.	pH (at 25°C)	IS 3025 (Pt -11) 1983	-	7.74	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	1	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	42.0	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	8.8	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	30.75	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	18.85	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	4.86	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	124	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	13.16	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.48	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt -31) 1978	mg/L	6.1	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	BDL (DL 0.02)	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 ***

Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. This report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 16, 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 - 2408411, 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	03.10.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	04.10.2019
Date of Analysis start & completion	04.10.2019 & 09.10.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	30.10.2019
Report No	HECS/W/002/041019

GROUND WATER QUALITY MONITORING RESULTS - OCTOBER 2019

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	-	7.88	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	5	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	68.8	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	86.0	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	17.6	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	76.8	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	15.9	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	10.2	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	232	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	6.17	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	5.3	45 max
15.	Iron as Fe	IS 3025 (Pt -53) 2003	mg/L	0.24	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622 1981 (RA 2009)	MPN/100mL	Absent	Not Detectable
18.	<i>Escherichia coli</i>	IS 1622 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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. This report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss / damage caused by use or misuse of test report after invaliding or lapse of test report. 5. The test results relate only to the test items. 6. Test under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 16, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

C-45, Industrial Estate, Balkampady, Mangalore, Karnataka - 576011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

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

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 I&T New Labour Colony
Sample drawn by	HECS
Date of Sampling	03.10.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	04.10.2019
Date of Analysis start & completion	04.10.2019 & 09.10.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	30.10.2019
Report No	HECS/W/003/041019

GROUND WATER QUALITY MONITORING RESULTS - OCTOBER 2019

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	-	7.69	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	5	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	32.8	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	80	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	12.82	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	74.99	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	17.8	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	11.66	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	248	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	69.95	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	5.3	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	0.22	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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability for loss/damage caused by use or misuse of test report after receiving or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985555 Fax: 42985500 E-mail: labsales@hecs.in

C-45, Industrial Estate, Balakampady, Mangalore, Karnataka - 575011.

Pit: 0824 - 2409111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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	23.10.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	24.10.2019
Date of Analysis start & completion	24.10.2019 & 31.10.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	31.10.2019
Report No	HECS/W/004/241019

GROUND WATER QUALITY MONITORING RESULTS - OCTOBER 2019

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	-	7.00	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	63	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	9.7	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	35.2	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	19.8	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	9.3	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	172	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	16.9	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.25	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt -31) 1978	mg/L	6.2	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(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



Authorized Signatory

Dr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 14 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss / damage caused by use or misuse of test report after invalidating or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

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 - 2409111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

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

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	03.10.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	04.10.2019
Date of Analysis start & completion	04.10.2019 & 09.10.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	30.10.2019
Report No	HECS/W/005/041019

OPEN WELL WATER QUALITY MONITORING RESULTS - OCTOBER 2019

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	-	6.76	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	1	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	0.9	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	24	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	4.0	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	21.12	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	28.8	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -45) 1994	mg/L	3.4	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	117	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	12.7	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.32	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	0.022	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	IS1522:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	<i>Escherichia coli</i>	IS1522:1981(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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test results will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss / damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. It is not under scope of accreditation.

HECS/Q/FMT/50

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	OW2 - Open Well Water collected from Shantigudda Village
Sample drawn by	HECS
Date of Sampling	03.10.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	04.10.2019
Date of Analysis start & completion	04.10.2019 & 09.10.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	30.10.2019
Report No	HECS/W/006/041019

OPEN WELL WATER QUALITY MONITORING RESULTS- OCTOBER 2019

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	-	6.61	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	1.5	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	30.0	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	9.61	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1985	mg/L	24.9	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	16.9	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	88	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	0.23	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt -31) 1978	mg/L	5.8	45 max
15.	Iron as Fe	IS 3025 (Pt -53) 2003	mg/L	BDL (DL 0.02)	0.3 max
16.	Hexavalent Chromium Cr ⁶⁺	IS 3025 (Pt -52) 2003	mg/L	BDL (DL 0.01)	0.05 max
17.	Total coli form Bacteria	IS 1622:1981(RA 2009)	MPN/100mL	Absent	Not Detectable
18.	Escherichia coli	IS 1622:1981(RA 2009)	Per 100mL	Absent	Not Detectable

Notes: 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



Authorized Signatory

(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 14 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

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



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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 Premude Village
Sample drawn by	HECS
Date of Sampling	03.10.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	04.10.2019
Date of Analysis start & completion	04.10.2019 & 9.10.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	30.10.2019
Report No	HECS/W/007/041019

OPEN WELL WATER QUALITY MONITORING RESULTS - OCTOBER 2019

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	-	7.85	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	Colourless	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	2.2	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	11.2	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	26.9	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	13.9	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	129	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	20.6	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.25	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt -31) 1978	mg/L	5.3	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	BDL (DL 0.02)	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



Authorized Signatory

(Dr.K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss of damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items. 6. It is not under purview of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.

Ph: 42985555 Fax: 42985800 E-mail: labsales@hecs.in

C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.

Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & OHSAS 18001 Certified.

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	23.10.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	24.10.2019
Date of Analysis start & completion	24.10.2019 & 31.10.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	31.10.2019
Report No	HECS/W/008/241019

SURFACE WATER QUALITY MONITORING RESULTS

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	-	7.21	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	1	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	1.4	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	52	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	19.23	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	47.16	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	19.85	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	147	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	6.17	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.12	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt -31) 1978	mg/L	5.8	45 max
15.	Iron as Fe	IS3025 (Pt -53) 2003	mg/L	BDL (DL 0.02)	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 - Nephelometric Turbidity 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

Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoking or issue of test report. 5. The test results relate only to the test item. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 82nd 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	SW2 - Surface Water collected Near OMPL - Near Central Warehouse
Sample drawn by	HECS
Date of Sampling	23.10.2019
Qty. of sample received	2 L in HDPE Can + 100 sterile container
Date of sample received	24.10.2019
Date of Analysis start & completion	24.10.2019 & 31.10.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	31.10.2019
Report No	HECS/M/009/241019

SURFACE WATER QUALITY MONITORING RESULTS

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	-	6.66	6.5-8.5
2.	Colour	IS 3025 (Pt -4) 1983	Hazen unit	1	15
3.	Turbidity	IS 3025 (Pt -10) 1984	NTU	16.4	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	28.14	600 max
7.	Calcium as Ca	IS 3025 (Pt -40) 1991	mg/L	6.44	200 max
8.	Total Alkalinity as CaCO ₃	IS 3025 (Pt -23) 1986	mg/L	18.63	200 max
9.	Chloride as Cl	IS 3025 (Pt -32) 1988	mg/L	15.88	1000 max
10.	Magnesium as Mg	IS 3025 (Pt -46) 1994	mg/L	2.93	100 max
11.	Total Dissolved Solids	IS 3025 (Pt -16) 1984	mg/L	70	2000 max
12.	Sulphate as SO ₄	IS 3025 (Pt -24) 1986	mg/L	8.3	400 max
13.	Fluoride	IS 3025 (Pt -60) 2008	mg/L	0.15	1.5 max
14.	Nitrate as NO ₃	ASTM (Pt -31) 1978	mg/L	5.6	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

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

End of Report



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: krc@hecs.in, Website: www.hecs.in



Certificate No. TC-5786

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

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	03.10.2019
Report Date	02.11.2019
Report No.	HECS/N/001/021119

NOISE MONITORING - OCTOBER 2019 RESULTS

S.No.	Sampling Location	MoEFCC requirements in dB		Avg. Noise level observed in dB	
		Day	Night	Day	Night
1.	OMPL-North	75	70	63.2	56.2
2.	OMPL-South			59.8	55.9
3.	OMPL-East			63.6	54.2
4.	OMPL-West			64.8	57.1

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 *****



[Signature]

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-6786

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	03.10.2019
Qty. of sample received	5 L in HDPE Can + 1 L amber glass bottle
Date of sample received	04.10.2019
Date of Analysis start & completion	04.10.2019 & 11.10.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	12.10.2019
Report No	HECS/WW/002/041019

ETP EFFLUENT WATER RESULTS - OCTOBER 2019

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
1.	Color	IS 3025 (Pt 4):1983(RA 2006)	Hazen Units	1	All efforts should be made to remove colour and unpleasant odour as far as practicable
2.	Odour	IS 3025 (Pt 5):1983,RA 2006		Disagreeable	
3.	Total Suspended Solids	2540D APHA 22nd Edn.. 2012	mg/L	BDL (DL 4)	100
4.	pH	IS 3025 (Pt 11):1983(RA 2006)	-	7.43	6.0-8.5
5.	Temperature	IS 3025 (Pt 9):1983(RA:2006)	°C	30	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 4)	5
7.	Total Residual Chlorine as Cl ₂	IS 3025 (Pt 26):1986(RA 2009)	mg/L	BDL (DL 0.1)	1
8.	Ammonical Nitrogen as N	IS 3025 Pt (34):1988	mg/L	5.3	50
9.	Total Kjeldhal Nitrogen as N	IS 3025 Pt (34):1988	mg/L	21.9	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	4.0	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(Pt 52):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



Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invalidating or issue of test report. 5. The test results relate only to the test items. 6. It is not under scope of accreditation.

HECS/Q/FMT/50

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	Guard Pond Pump Discharge (ETP Effluent)
Sample drawn by	HECS
Date of Sampling	03.10.2019
Qty. of sample received	5 L in HDPE Can + 1 L Amber glass bottle
Date of sample received	04.10.2019
Date of Analysis start & completion	04.10.2019 & 11.10.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	12.10.2019
Report No	HECS/WW/002/041019

ETP EFFLUENT WATER RESULTS - OCTOBER 2019

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 22nd 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 55):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	2.1	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 EFFLUENT WATER AS ABOVE PARAMETERS ARE WITHIN STANDARDS

End of Report



Authorized Signatory
Dr K Ganesan - Lab Manager

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after receiving or issue of test report. 5. The test results relate only to the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: #18, 82nd 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 - 2408411, 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-8786

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	23.10.2019
Qty. of sample received	2 L in HDPE Can + 1 L amber glass bottle
Date of sample received	24.10.2019
Date of Analysis start & completion	24.10.2019 & 31.10.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	31.10.2019
Report No	HECS/WW/006/241019

GUARD POND PUMP DISCHARGE (ETP EFFLUENT) RESULTS - OCTOBER 2019

S.No.	Parameters monitored	Test method followed	Units	Results	Permissible Limit
1.	Color	IS 3025 (Pt 4):1983(RA 2006)	Hazen Units	Colourless	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 22nd Edn., 2012	mg/L	BDL (DL 4)	100
4.	pH	IS 3025 (Pt 11):1983(RA 2006)	-	7.64	6.0-8.5
5.	Temperature	IS 3025 (Pt 9):1983(RA:2006)	°C	30	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 (Pt 26):1986(RA 2009)	mg/L	BDL (DL 0.1)	1
8.	Ammonical Nitrogen as N	IS 3025 Pt (34):1988	mg/L	7.0	50
9.	Total Kjeldhal Nitrogen as N	IS 3025 Pt (34):1988	mg/L	24.6	100
10.	Free Ammonia as NH ₃	IS 3025 (Pt 34):1998 RA, 2009	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	7.77	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(Pt 52):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



[Signature]
Authorized Signatory
(Dr K Ganesan - Lab Manager)

1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 18 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after involving or misuse of test report. 5. The test results relate only to the test items. 6. If not under scope of accreditation.

HECS/Q/FMT/50

Hubert Enviro Care Systems (P) Ltd.

H.O.: # 18, 92nd Street, Asbok 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	Guard Pond Pump Discharge (ETP Effluent)
Sample drawn by	HECS
Date of Sampling	23.10.2019
Qty. of sample received	2 L in HDPE Can + 1 L amber glass bottle
Date of sample received	24.10.2019
Date of Analysis start & completion	24.10.2019 & 31.10.2019
Sample Collected by	Hubert Enviro Care Systems (P) Ltd
Report Date	31.10.2019
Report No	HECS/WW/006/241019

ETP EFFLUENT WATER RESULTS - OCTOBER 2019

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.	Pticle Size of Suspended solids	APHA 22nd 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	0.1	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 EFFLUENT WATER AS ABOVE PARAMETERS ARE WITHIN STANDARDS

End of Report



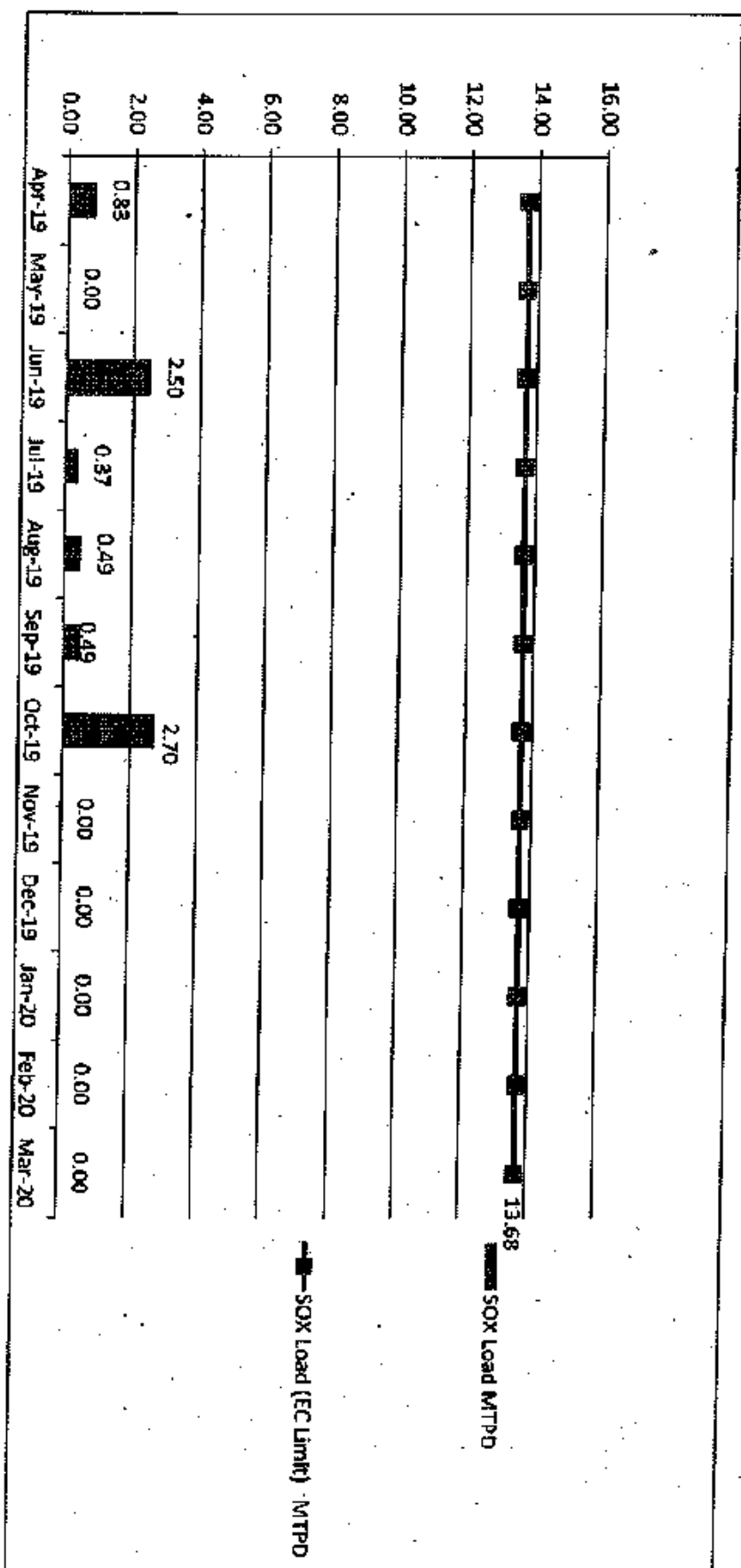
Authorized Signatory

Mr. K. Ganesan - Lab Manager

1. This report in full or part shall not be used for any promotional or publicity purpose without written consent of HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results are valid only for the test items. 6. Not under scope of accreditation.

HECS/Q/FMT/50

ANNEXURE-E SOX REPORT



ANNEXURE -1

Form-1 (Rule 4)

Returns Regarding Water Consumed during the Month of Oct, 2019

Name and address of the Consumer	Purpose for which water consumed	Reading at the beginning 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 Liters	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 assesse	Remarks
M/s ONGC Mangalore Petrochemicals Limited, Mangalore Special Economic Zone, Perumde, Mangalore-574 509	Industrial cooking, spraying in mine pits or boiler feed						
	Cooking Water	0	78,464	78,464			
	Boiler Feed Water	0	80,923	80,923			
	Fire Water	0	53,827	53,827			
	Domestic purpose						
	Drinking Water & Sanitation	0	5,984	5,984			
	Processing whereby water gets polluted and the pollutants are easily bio-degradable						
Service Water			5,888	5,888			
Total Consumption				2,24,285			

Signature of the Consumer

Name

Address

Shivprakash, Sr. Manager(Env)

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

ANNEXURE - G1.

ONGC Mangalore Petrochemicals Limited

Production Details for October, 2019

Net Naptha Processed – 1,33,332 MT

Sl. No.	Name of the Product	Quantity, MT
1	Paraxylene (Product)	71,489
2	Benzene (Co product)	16,791