**MONITORING OF ENVIRONMENTAL PLAN FOR JN PORT ENVIRONMENTAL MONITORING REPORT- EXECUTIVE SUMMARY**

## 1.0 Ambient Air Monitoring:

Monthly average values of Air quality parameters at various stations in JNPT area during October, 2018.

| Parameters | | | Industrial (Port Operation) area | | | | | | Residential Area | Eco sensitive area |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Station name | | | | | | | |
| | Units | NAAQS | POC | IMC | NG | SEZ | APM | BMCT | RC | EC |
| $PM_{10}$ | ($\mu g/m^3$) | 100 | 183.3 | 186.8 | 196.1 | 144.4 | 148.4 | 162.8 | 110.2 | 65.6 |
| $PM_{2.5}$ | ($\mu g/m^3$) | 60 | 68.9 | 64.9 | 76.7 | 53.1 | 57.8 | 54.2 | 45.7 | 38.9 |
| $SO_x$ | ($\mu g/m^3$) | 80 | 30.1 | 34.5 | 32.3 | 32.1 | 32.5 | 31.6 | 28.8 | 22..5 |
| $NO_x$ | ($\mu g/m^3$) | 80 | 37.0 | 39.6 | 36.8 | 34.04 | 37.3 | 35.9 | 32.2 | 28.1 |
| $O^3$ | ($\mu g/m^3$) | 100 | 9.7 | 11.8 | 11.7 | 11.8 | 11.2 | 13.1 | 11.7 | 8.9 |
| $C_6H_6$ | ($\mu g/m^3$) | 5 | 1.7 | 1.6 | 1.8 | 1.7 | 1.7 | 1.6 | 1.5 | <1.0 |
| B(a)P | ($ng/m^3$) | 1 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| CO | ($\mu g/m^3$) | 4 | 1.7 | 1.9 | 1.9 | 1.6 | 1.6 | 1.6 | 1.2 | <1.0 |
| $CO_2$ | (ppm) | | 349.5 | 340.9 | 367.0 | 376.3 | 342.0 | 351.8 | 322.0 | 308.5 |

**Conclusion:**

- 24-hr average concentration of $PM_{10}$, $PM_{2.5}$, $SO_2$ and $NO_2$ were measured at eight locations viz. POC, IMC, North Gate,SEZ, APM terminals, BMCT, JNP residential township and Elephanta using high volume samplers (APM 460 NL and APM 550 MFC)
- From the results obtained for the month of October, 2018, it is noticed that overall ambient air quality of the JN Port area is within CPCB permissible limits except $PM_{10}$ at all locate and $PM_{2.5}$ parameters at POC, IMC, North Gate and SEZ. The port is also taking various precautionary measures such as Inter Terminal Tractor Movement Facility, time to time cleaning of paved and unpaved roads, Shore power supply to tugs and port crafts, use of tarpaulin sheets to cover earth filling dumper and tree plantation.
- In this month prominent wind direction (blowing from) was North (N) in the port area. Average values of wind speed, temperature, relative humidity and solar radiation recorded were 8.06m/s, 29.35$^0$C, 67.07%, and 0.10CCM respectively.

**Corrective Action Suggested:**

- To reduce $PM_{10}$ time to time collection of wreckage and frequent cleaning should be done from paved and unpaved road as well construction sites.
- Avoid excessive idling of automobiles and ships.
- Tarpaulin sheet must be used for dumpers carrying construction material and earth filing material to avoid spreading of dust particle in the air.
- At JNP Township Green mesh cloth should be used to minimize dust generated during renovation work.
- All vehicles entering into the port region must be strictly checked PUC documents of and promote for routine maintenance of vehicle to lessen emission.
- Evacuation of tractor trailers traffic as early as possible.
- Dumper carrying construction material and earth filing material must be covered with tarpaulin sheet to avoid spreading of dust particle in the air.
- Practice should be initiated for using mask as preventative measure, to avoid inhalation of dust particle.

**2.0 <u>Marine Water Quality</u>**

Observed Concentration Ranges of Marine Water for Various Parameters for JNP Area during Tidal Cycle (For October, 2018)

| Sl. No. | Parameter | Unit | Observed Range (Harbour) | Prescribed Limits |
|---|---|---|---|---|
| **1** | Temperature | ˚C | 22.3-25.3 | **-** |
| **2** | pH | - | 8.01-8.29 | **6.5 - 9.0** |
| **3** | Salinity | ppt | 20.9-38.3 | **-** |
| **4** | Turbidity | NTU | 12.3-68.4 | **-** |
| **5** | TDS | mg/L | 20578-23575 | **-** |
| **6** | TSS | mg/L | 60-142 | **-** |
| **7** | TS | mg/L | 20690-23670 | **-** |
| **8** | DO | mg/L | 6.01-6.96 | **3.0 mg/L(min.) or 40% of saturation value** |
| **9** | COD | mg/L | 38-76 | **-** |
| **10** | BOD | mg/L | <2.0 | **5 (max.)** |
| **11** | $NH_3$-N | mg/L | <1 | **-** |
| **12** | Phenol | mg/L | <0.001 | **-** |

| | | | | |
|---|---|---|---|---|
| **13** | Oil & Grease | mg/L | <4.0 | **10 (max.)** |
| **14** | Total Plate Count | CFU/ml | 32-74 | **-** |
| **15** | Fecal Coliforms | MPN/100ml | 52-81 | **500 (max.)** |

**Conclusion:**

From the above results it can be concluded that, the Port's working does not affect the Quality of the Marine water. The overall Marine Water Quality of the Harbour is in good category.

## 3.0 Marine Ecology (Flora and Fauna)

| Sr. No. | Parameter | Observed Range | Criteria |
|---|---|---|---|
| **1** | Net Primary Productivity | 66.3-125.4 mg C/$m^3$ | <1500 mg C/$m^3$/day at surface |
| **2** | Chlorophyll a | 1.121-1.322 mg/$m^3$ | <4 mg/$m^3$ (Oligotrophic class), 4-10 mg/$m^3$ (Mesotrophic class), >10 (Eutrophic class) |
| **3** | Phosphate | 25-88 µg/L | 0.1-90 µg/L |
| **4** | Nitrate | 231-625 µg/L | 1.0-500 µg/L |
| **5** | Nitrite | <10 µg/L | <125 µg/L |
| **6** | Particulate Organic Carbon | 210-320 mg/$m^3$ | 10-100 mg/$m^3$ |
| **7** | Silicate | 428-946 µg/L | 10-5000 µg/L |

The results obtained from the study for the month of October 2018. Net Primary Productivity and Chlorophyll-a were well within prescribe standards for ecological parameters for Arabian Sea. Phosphate, Nitrite and Silicate are also well within prescribing standards for ecological parameters for Arabian Sea. The values for Nitrates and Particulate Organic Carbon (POC) exceeds the prescribed standards which might be usual phenomenon happening due to discharge of untreated sewage and Industrial waste in to the sea water by the nearby nearby villages etc. However, considering the activities in JNP Harbour, it is seen that the marine ecosystem is not adversely affected by Port activities.

**Corrective Action Suggested:**

Proper care should be taken for treatment of sewage and industrial waste before discharging into the open sea by open sea by concerned Municipal Corporation, Municipal Council, MIDCs and nearby village's authorities etc.

## 4.0 Drinking Water Quality

The drinking water being supplied to JN Port is safe for drinking purpose. At all drinking water monitoring stations around port area are found to be as per the drinking water specifications given in IS 10500:2012 and also on the basis of analysis parameters.