

## MONITORING OF ENVIRONMENTAL PLAN FOR JN PORT

### ENVIRONMENTAL MONITORING REPORT- AUGUST 2022 EXECUTIVE SUMMARY

#### 1.0 Ambient Air Monitoring:

Monthly average values of Air Quality parameters at various stations in JNP Area during August, 2022.

Parameters			Industrial (Port Operation) Area							Residential Area	Eco Sensitive area
	Units	NAAQS	IMC	NG	SEZ	APM	BMCT	CB	DP World	RC	EC
PM <sub>10</sub>	µg/m <sup>3</sup>	100	92.21	61.61	102.20	80.05	52.17	49.55	46.84	25.09	48.90
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	42.16	41.43	36.76	38.83	28.80	39.59	26.24	19.65	12.31
SO <sub>2</sub>	µg/m <sup>3</sup>	80	22.29	24.14	11.71	13.23	12.75	12.19	16.75	10.35	9.85
NO <sub>2</sub>	µg/m <sup>3</sup>	80	35.64	40.00	21.67	29.08	25.60	22.61	33.92	16.79	14.53
NH <sub>3</sub>	µg/m <sup>3</sup>	80	30.03	35.72	25.61	24.40	25.11	22.22	17.76	13.28	10.77
O <sub>3</sub>	µg/m <sup>3</sup>	100	10.79	9.21	6.63	9.55	9.79	8.92	8.63	3.40	2.45
Pb	µg/m <sup>3</sup>	0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
As	ng/m <sup>3</sup>	6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ni	ng/m <sup>3</sup>	20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	5	1.56	2.14	1.45	1.44	1.99	1.67	1.51	1.14	0.87
B(a)P	ng/m <sup>3</sup>	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CO	mg/m <sup>3</sup>	4	0.63	0.59	0.58	0.58	0.58	0.52	0.35	0.34	0.13
AQI			92.21	69.05	101.47	80.05	52.17	65.98	46.84	32.74	48.90

#### 1.1 Continuous Ambient Air Quality Monitoring:

Monthly average values of Air Quality parameters by Continuous Ambient Air Quality Monitoring Station at Port Operation Center (POC) - JNP area during August, 2022.

Date	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	NH <sub>3</sub>	O <sub>3</sub>	C <sub>6</sub> H <sub>6</sub>	CO	C <sub>7</sub> H <sub>8</sub>	NO	NO <sub>x</sub>	AQI
	ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>	mg/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>	Remark
NAAQS	100	60	80	80	400	100	5	2	--	--	--	Good
Average												
August-22	37.80	18.94	1.01	20.42	1.29	4.95	5.68	0.18	8.77	17.55	37.97	37.80

## Conclusion:

➤ 24-hr average concentration of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub>, NH<sub>3</sub> and other parameters were measured at ten locations with one continuous at POC and 9 fixed Monitoring station viz. IMC, NG, SEZ, APM, BMCT, CB, DP World, JNP residential township and EC area using high volume air samplers, respirable dust sampler (APM 460 NL and APM550 MFC) and gaseous sampler.

➤ During August, 2022 overall ambient air quality of the JNP is within CPCB permissible limits except PM<sub>10</sub>, at SEZ is due to Construction Activities. To improve air quality the port is using number of precautionary measures, such as maintained a wide expanse of Green zone, procurement of Electric Cart under green port initiatives, initiated Inter-Terminal Transfer (ITT) of tractor-trailers, switched from diesel to electrically powered e-RTGCs which not just help saving cost also eco-friendly to environment, installed solar panels on the roof tops of various building in the office premises which cumulatively reduces electricity consumption, the use of LED lights at JNP area helps in lower energy consumption and decreases the carbon foot prints in the environment, time to time cleaning of paved and unpaved roads, use of tarpaulin sheets to cover dumpers at project sites etc. are helping to achieve the cleaner and green future at port.

➤ JNPA Goes Green by deploys 9 e-vehicles and committed to sustainable growth to reduce the port's impact on the environment and neighboring communities. E-cars are zero-emission vehicles that enable the transition of JN Port to green and energy-efficient mobility solutions. The work of concretizing roads at JN Port will reduce fuel consumption, travelling time and maintenance smooth movement of traffic on the port road.

➤ JNPA received 315.50 mm of rainfall during the month of August, 2022. The total rainfall of monsoon season 1609.00 mm was recorded from April 22 to August 22. The prominent wind direction (blowing from) was the West South West (WSW) in the port area. Average values of wind speed, temperature, relative humidity and solar radiation recorded were 5.83 Km/hr, 27.72°C, 89.74 % and 44.03 W/m<sup>2</sup> respectively. The maximum wind speed recorded was 10.44 Km/Hr.

## Solution towards the Green port:

- In case of heavy continued rain, follow weather forecasts.
- During a thunderstorm, avoid standing under trees and electricity poles.
- Make sure the emergency and first aid bags are ready.
- Perform periodic maintenance for electrical and water systems.

- Use of renewable energy like wind energy should be optimal and ensure to work continuously.
- Avoid excessive idling of automobiles and ships.
- Use the public transport and all basic items at public interaction places as much as possible.
- New services and technology like Inter-Terminal Transfer (ITT) are worthy selection to reduce Port operation efficiency and fuel cost.
- Dumper carrying construction material and earth filling material must be covered with tarpaulin sheet to reduce dispersal of dust in the air.
- Practice should be initiated for using mask as preventative measure, to avoid inhalation of dust particle- Mask advised in sensitive areas.
- To avoid airborne disease Port workers must maintain a safe distance.
- Limit the Activity and time of Exposure in Sensitive Area Prior planning.
- Conventional RTGCs should be altered as E-RTGCs counting inside the port completely.
- New scanning technology and new high power Tugs are reducing operation timing and CO<sub>2</sub> Emission are good creativity.

## 2.0 Marine Water Quality

Observed concentration ranges of Marine Water for various parameters for JNP area during tidal cycle (August, 2022).

Sr. No.	Parameter	Observed Range	Unit	Prescribed Limits
1	Temperature	°C	28.14-31.6	-
2	pH	-	7.81-7.99	<b>6.5 - 9.0</b>
3	Salinity	ppt	23.81-26.59	-
4	Turbidity	NTU	29.0-178	-
5	TDS	mg/L	28115-36268	-
6	TSS	mg/L	178-281	-
7	TS	mg/L	28364-36512	-
8	DO	mg/L	4.17-5.13	<b>3.0 mg/L(min.) or 40% of saturation value</b>
9	COD	mg/L	26.0-86.8	-
10	BOD	mg/L	1.82-2.80	<b>5 (max.)</b>
11	Ammonia	mg/L	0.0016-0.0595	-
12	Phenol	mg/L	0.014-0.034	-
13	Oil & Grease	mg/L	0.012-0.239	<b>10 (max.)</b>
14	Total Plate Count	CFU/ml	54-202	-
15	Fecal Coliforms	MPN/100ml	100-696	<b>500 (max.)</b>

### 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):

Sl. No.	Parameter	Observed Range	Criteria
1	Net Primary Productivity	9.11-20.83 mg C/m <sup>3</sup> /day	<1500 mg C/m <sup>3</sup> /day at surface
2	Chlorophyll a	0.1068-0.4272 mg/m <sup>3</sup>	<4 mg/m <sup>3</sup> (Oligotrophic class), 4-10 mg/m <sup>3</sup> (Mesotrophic class), >10 mg/m <sup>3</sup> (Eutrophic class)
3	Phosphate	32.25-79.27 µg/L	0.1-90 µg/L
4	Nitrate	349.48-874.71 µg/L	1.0-500 µg/L
5	Nitrite	51.61-112.88 µg/L	<125 µg/L
6	Particulate Organic Carbon	16.13-24.22 mg/m <sup>3</sup>	10-100 mg/m <sup>3</sup>
7	Silicate	47.68-67.56 µg/L	10-5000 µg/L

The results obtained from the study for the month of August, 2022. Nitrates were observed higher than prescribed standards limits of ecological parameters for Arabian Sea as monsoon upwelling causes enormous increase of these nutrient. Net Primary Productivity and Chlorophyll-a were well within prescribed standards for ecological parameters for Arabian Sea. 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 nearby concerned cities, industrial estates and villages etc.

### 4.0 Drinking Water Quality

During this month results of turbidity were within the range at all and the values observed for TDS for all the samples were observed within range. 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 parameter. The drinking water supplied to JN Port is safe for drinking purpose.

### 5.0 Monitoring Performance of Sewage Treatment Plant

It is seen that the performance of STP at JNP Township is satisfactory by overall. The treatment plant was well maintained during [August 2022] with considerable removal efficiency achieving the standards prescribed for final disposal.