

Ref No. APMT/ENV/MoEF&CC/EC&CRZ/20-21/8

Dated;20-May-2020

To,  
**The Principal Chief Conservator of Forests (C),  
Ministry of Env., Forest and Climate Change  
Regional Office (Western Zone),  
Kendriya Paryavaran Bhawan,  
E-5 Arera Colony, Link Road-3,  
Ravishankar Nagar, Bhopal-462016**

**Sub: Submission of Six-Monthly Compliance Status of Environmental & CRZ Clearance  
Report for APM Terminal- Pipavav, Rajula- Gujarat.**

**Ref:**

1. Environmental Clearance Letter No.: 10-91/2009-IA.III, dated; 5 June 2012.
2. EC Amendment Vide No. 11-91/2009-IA.III, dated; 18 Feb 2014.
3. EC Amendment Vide No. 11-91/2009-IA.III, dated; 30 March 2015.
4. EC Amendment Vide No. 11-91/2009-IA.III, dated; 02 Sep 2019.

**Respected Sir,**

With reference to the above subject, please find enclosed Six- Monthly (Half Yearly) Environmental Clearance (EC) and CRZ Clearance Compliance Status report for the period of Oct-19 to March-2020 along with Environmental Parameters Report and Corporate Social Responsibility status report.

This is for your kind information & record please.  
kindly acknowledge the receipt of these reports.

Thanking You,

Yours faithfully

**For APM Terminal Pipavav**



**Sanjay Singh  
Head- HSSE Improvement  
APM Terminals, Pipavav  
Post- Uchhaiya, Taluka-Rajula  
District- Amreli, Pipavav Port-365560**



**CC:**

1. **The Chairman, Zonal Office**-Central Pollution Control Board, Parivesh Bhavan, Opp. VMC ward Office No. 10, Subhanpura, Vadodara-390023
2. **The Member Secretary**, Gujarat Pollution Control Board, Paryavaran Bhavan, Opp. Bij Nigam, CHH Road, Sector 10A, Gandhinagar, Gujarat 382010.
3. **The Regional Officer**, Gujarat Pollution Control Board, Swastik Complex, 1<sup>st</sup> Floor, Plot No. 1616/1617, Near Vir Mokhadaji Circle, Ghogha Road, Bhavnagar-364001(Gujarat).
4. **Director (IA-III)**, Monitoring Cell, Ministry of Environment, Forest & Climate Change, CGO Complex, Lodhi Road, New Delhi-110003.

**Encl: EC & CRZ Compliance Report (Oct-19 to March-2020)**

**SIX MONTHLY COMPLIANCE REPORT  
OF  
ENVIRONMENT & CRZ CLEARANCE  
GUJARAT PIPAVAV PORT LIMITED  
(APM TERMINAL-PIPAAVAV)**

**At  
RAJULA, DISTRICT- AMRELI  
GUJARAT**

**Submitted to:**

**Ministry of Environment Forest & Climate Change, (WR Office) Bhopal  
Ministry of Environment Forest & Climate Change, New Delhi  
Central Pollution Control Board, Zonal Office (Vadodara)  
Gujarat Pollution Control Board-Bhavnagar/Gandhinagar (HO)**

**Submitted by:**

**APM Terminals Pipavav  
Gujarat Pipavav Port Ltd.  
Post Office- Rampara No.2, Village- Rajula  
District- Amreli, Gujarat-365560-India**

**PERIOD: OCTOBER 2019- MARCH 2020**

**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
Accorded by the MoEF&CC for Gujarat Pipavav Port Limited**

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**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
Accorded by the MoEF&CC for Gujarat Pipavav Port Limited**

**1.0: Introduction:**

1. Gujarat Port Pipavav is operated by APM Terminals, part of the A.P. Moller-Maersk Group, one of the largest container terminal operators in the world.
2. APM Terminals operate a network of 76 ports globally.
3. Port Pipavav is in Saurashtra region in the state of Gujarat, 152 nautical miles northwest of Mumbai (less than ten hours steaming time) on the west coast of India. Approximately 140 kilometers southwest of Bhavnagar, situated at a latitude of 20°54'N and a longitude of 71°30'E. Port Pipavav is an all-weather port in the state of Gujarat and provides immediate access to a rich hinterland and key markets in northwest India.
4. All the operation related permits, including Environmental Clearance, Forest Clearance, CRZ Clearance from MOEF&CC and consents from Gujarat Pollution Control Board, are in place.
5. Annual Environmental quality monitoring in & around the port site is being done by M/s. Kadam Environmental Consultant, a NABL & MoEF&CC approved Laboratory.
6. Upliftment of the socio -economic status of the nearby community and society are carried out on a continuous basis through various programmes run under the company's Corporate Social Responsibility (CSR) scheme.
7. A vast green belt as per the CPCB guidelines is being developed to curb the emission and to provide an aesthetic look.
8. Point wise compliance status of Environmental Clearance for GPPL is furnished herewith.

**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
Accorded by the MoEF&CC for Gujarat Pipavav Port Limited  
Compliance Status on Environment & CRZ Clearance  
(Gujarat Pipavav Port Limited)**

1. MOEF Ref. Letter No.: 10-91/2009-IA.III, dated 5 June 2012
2. MOEF Ref. Letter No.: 11-91/2009-IA.III, dated 18 Feb 2014
3. MOEF Ref. Letter No.: 11-91/2009-IA.III, dated 30 March 2015.
4. MOEF&CC Ref Letter No.: 11-91/2009-IA.III, dated 2 Sep 2019.

Sr. No.	Stipulation	Compliance Status
35.	<b>Specific Condition:</b>	
1.	The landing jetty for the mooring of ferry crafts which facilitates transport of Shiyalbet Islanders to/from the Shiyalbet Island shall be upgraded with proper connectivity as committed.	<b>Complied.</b>  Existing facility upgraded with concrete road facility, up to the jetty.
2.	The coal shall be stored only in designated stock yard with dust control measures viz. wind screen of height at least 2 ft above the of coal stock, made of fabric/HDPE, water sprinkler assignment, green belt of at least three layers of suitable trees and scrubs. Use of creepers should also be exploded in consultation with the Forest Department.	<b>Complied.</b>  <b>Major Steps Taken-</b> <ul style="list-style-type: none"> <li>➤ Coal has been stored in dedicated, designed COAL YARD.</li> <li>➤ WATER CURTAIN has been installed on windward side of yard, which blanket the area with very fine water spray.</li> <li>➤ The yard is encircled by three meters high chain link fence with synthetic mesh and with tree plantation at three levels.</li> <li>➤ Green cover has been upgraded by gap filling. Species planted as recommended by local Forest Officer.</li> <li>➤ Coal water Re-circulation system is in place.</li> </ul>

**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
Accorded by the MoEF&CC for Gujarat Pipavav Port Limited**

3.	<p>The project Proponent shall provide additional plantation in the gaps to develop proper filter screen.</p> <p>(a) The entry and exit points for dumper trucks shall be suitably designed with loop in and loop out arrangement of traffic and a fabric mesh for acting as a filter barrier for coal dust.</p> <p>(b) Bus frequency for Shiyalbet Island residents should be increased during peak hours so as to reduce the waiting time to 10 minutes.</p>	<p><b>Being Complied.</b></p> <p>Gap Filling and New Plantation/ sampling is being carried out on regular basis.</p> <p>Loop in &amp; Loop Out Traffic Management is in practice and heavy penalty provision in port for the violation of traffic rules.</p> <p>Bus frequency increased.</p>
4	<p>The vehicle used for coal transportation to M/s. UltraTech Cement Ltd. at Jaffarabad shall be properly covered to prevent dust pollution.</p>	<p><b>Being Complied.</b></p> <p>All the raw material transportation out -side of port premises is being done only through covered trucks/ dumpers.</p>
5.	<p>16.5 Mcum dredged material out of total 18 Mcum is proposed to be utilized for reclamation purpose in port development. The rest shall be disposed of shore at the site suggested by NIOT.</p>	<p><b>Noted for Compliance.</b></p>
6.	<p>PP shall adopt closed conveyer coal transport to the proposed power plants in the vicinity.</p>	<p><b>Noted for Compliance.</b></p> <p>At present no such facility has been set up near the port.</p>
7.	<p>Consent for establishment shall be obtained from Gujarat pollution Control Board under Air and Water Act and a copy shall be submitted to the Ministry before start of any construction work at the site.</p>	<p><b>Complied.</b></p> <p>CTE order, vide its no. PC/CCA-AMR-13(7)/GPCB ID 14808/115982, dated 22/06/2012. Which was valid up to 04/01/2017.</p> <p>The CTE was renewed and amended up to 30 April 2022, vide its order no. PC/CCA-AMR-13(7)/GPCB ID 14808/411575, dated 5/5/2017.</p>
8.	<p>The dredge materials contain sand-46%, silt-21% and clay 33 %. However, the proponent shall carry out chemical characteristics</p>	<p><b>Complied.</b></p>

**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
Accorded by the MoEF&CC for Gujarat Pipavav Port Limited**

	before disposal/using it for reclamation to ensure its suitability and prevent any likely impact.	The study of characterization has been done and submitted to MoEF&CC, DoEF, CPCB and GPCB, vide our letter no. APMT/ENV-54/5269, dated 30/01/13.
9.	The storm water management shall be put in place before the commencement of the activities. Storm management report with technical details shall be submitted to RO of MoEF&CC within six months.	<p><b>Being Complied.</b></p> <p>The Concept report prepared and submitted to RO of MoEF&amp;CC, DoEF, CPCB &amp; GPCB, vide letter no. APMT/ENV-44/3966, dated 23/11/12 and APMT/ENV-54/5269, dated 30/01/13.</p>
10.	The proponent shall provide minimum 100 meters buffer from the mangroves. The existing mangroves shall be documented with latest satellite map and shall be submitted to RO, MoEF&CC for compliance verification purpose.	<p><b>Complied.</b></p> <p>100 meters of buffer from mangroves is maintained.</p> <p>Documentation of existing Mangroves along with provision for maintaining 100 meters buffer are being maintained and report submitted to MoEF&amp;CC, DoEF, and GPCB, vide letter no. APMT/ENV-54/5269, dated 30/01/13.</p>
11.	Requisite clearance including clearance from Petroleum and explosives Safety organization (PESO) formerly Explosive Department, Nagpur shall be obtained for establishment tank farms. All relevant provisions of MSIHC Rules 1989 shall be complied.	<p><b>Complied.</b></p> <p>PESO License (for Fuel Station) vide no. <b>P/WC/GJ/15/384(P 143282) is valid up to 31-12-2024.</b></p> <p><b>PESO permission vide no. G-22 (47) 162,</b> dated; 10-April-2012 for Commissioning of upgraded Sea water Based Firefighting System for handling LPG, POL and Chemicals on bulk liquid jetty at Port Pipavav.</p> <p><b>PESO permission vide no. G-22 (47) 162,</b> dated; 29-Nov-2018 for Commissioning of Butadiene handling at bulk jetty no. 5 of Port Pipavav.</p>

**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
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12.	Green belt of not less than 33 % shall be developed and maintained all along the boundary.	<p><b>Being Complied.</b></p> <p>Total 2,52,742 plantation has been done over an area of 257 acre, with survival rate of more than 80 %.</p> <p>Plantation is being done on phased manner.</p>
13.	The dry cargo shall be unloaded in to hopper and from hopper it will be taken through closed conveyor system to the storage yards.	<p><b>Complied.</b></p> <p>Current closed conveyer is under structural integrity review. Till such time coal unloading is done through hopper with mechanical open and close system which delivers the cargo to dumpers. No coal dumping carried out on jetty complete operation is through hoppers.</p>
14.	Mitigation plan for handling the dusty cargo/around storage yards as per presentation may be stipulated.	<p><b>Being Complied.</b></p> <p>An Environmental Steering Committee is formed at site to monitor and implement the best environmental practices as per mitigation plan/ guidelines issued by MoEF&amp;CC, CPCB &amp; GPCB.</p> <p>Continuous monitoring &amp; assessment of plan/ guidelines is being carried out by the team on regular basis.</p>
15.	There shall be no ground water drawl within CRZ area.	<p><b>Complied.</b></p> <p>The Port has piped water (Narmada Water) connection by M/s. Gujarat Water Infrastructure Ltd.- Barwala.</p> <p>Withdrawal of ground water within CRZ area of Port is strictly prohibited and there is no ground water withdrawal in port area for any purpose.</p>
16.	Sewage shall be treated, and the treatment facility shall be provided in accordance with the Coastal Regulation Zone notification,	<p><b>Complied.</b></p> <p>A modern technology, MBBR based Sewage Treatment Plant having capacity of 370 KLD</p>

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	<p>2011.The disposal of treated water shall confirm the regulation of State pollution Control Board.</p>	<p>for Residential Colony is installed and operational since June,2015. Another,80 KLD capacity mechanized tank STP is installed and operational near 370 KLD STP for Residential Colony.</p> <p>For Port, 25 KLD capacity STP is installed and operational near jetty.</p> <p>Treated water from both the STP is being re-used for green belt development and as sprinkling purpose to reduce fugitive emissions.</p> <p>Sample of STP inlet and Outlet is being analyzed by NABL &amp; MoEF&amp;CC approved laboratory and being submitted to the authorities.</p>
<p>17.</p>	<p>Solid waste management shall be as per Municipal Solid waste (management and handling) Rules, 2000.</p>	<p><b>Being Complied.</b></p> <p>3Types of bins (Bio-degradable, Non-biodegradable &amp; hazardous wastes) placed in various locations across the port and in residential township. Solid waste is being segregated from these bins by local Vendors and being disposed of by them.</p> <p>Plastic waste, wooden waste, E- waste, MS Scrap waste and HW are being collected from the site and stored in Hazardous Waste Storage area from there it is being sold out to authorized Recycler/Re-processors.</p> <p>Organic Waste Converter Machine (OWC) is being installed at the site for the conversion of Organic Waste in to the form of green Manure. <b>An Eco-friendly Initiative.</b></p>
<p>18.</p>	<p>The project shall be executed in such a manner that there shall not be any disturbance to the fishing activity.</p>	<p><b>Noted and Agreed.</b></p>

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19.	It shall be ensured that there is no displacement of people houses or fishing activity as a result of the project.	<b>Complied.</b>  No Displacement of people due to existing and/or proposed activities.
20.	No construction works other than those permitted in Coastal Regulation Zone notification shall be carried out in Coastal Regulation Zone area.	<b>Noted for Compliance.</b>
21.	The project proponent shall set up separate environment management cell for effective implementation of the stipulated environmental safeguards under the supervision of a Senior Executive.	<b>Complied.</b>  Separate Environment Management Cell is setup with qualified Environment background professional and the cell is headed by General Manager- HSSE, who directly report to Managing Director- APM Pipavav Port.
22.	The funds earmarked for environment management plan shall be included in the budget and this shall not be diverted for any other purposes.	<b>Being Complied.</b>  Separate Budget allotted for Environmental protection in every financial year under Budget Head HSSE [cost center (internal) 242 and GL Account 522650 to 105610].
<b>36. General Standards:</b>		
1.	Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.	<b>Noted for Compliance.</b>  All appropriate measures will be taken well in advance during start of Project Construction activities.
2.	Fully support shall be extended to the officers of this Ministry/Regional Office by the project proponent during inspection of the project for monitoring purposes by furnishing full details and action plan including action taken reports in respect of mitigation measures and other environmental protection activities.	<b>Noted &amp; Adhered.</b>
3.	A six -monthly monitoring report shall need to be submitted by the project proponent to the	<b>Being Complied.</b>

**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
Accorded by the MoEF&CC for Gujarat Pipavav Port Limited**

	Regional Office of this Ministry at Bhopal regarding the implementation of the stipulated conditions.	Half Yearly Compliance report is being submitted to Regional Office of MoEF&CC at Bhopal/ New Delhi, Gujarat Pollution Control Board-Bhavnagar/ Gandhinagar, along with Environmental Parameters Monitoring reports & CSR details as per time line stipulated by MoEF&CC.
4.	Ministry of Environment & Forest or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary, in the interest of environment and the same shall be complied with.	<b>Noted &amp; Agreed.</b>
5.	The ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with the satisfaction of the Ministry.	<b>Noted &amp; Agreed.</b>
6.	In the event of a change in project profile or change in the implementation agency, a fresh reference shall be made to the Ministry of Environment and Forest.	<b>Noted for Compliance.</b>
7.	The project proponents shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of land development work.	<b>Complied.</b> Existing project is self-financed.  For Expansion Project, if lenders (Bank’s) involve will inform to Authorities well in advance.
8.	A copy of the clearance letter shall be marked to concerned Panchayat/local NGO, if any, from whom any suggestion/representation has been made received while processing the proposal.	<b>Complied.</b>

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9.	Gujarat pollution control Board shall display a copy of the clearance letter at the Regional Office, district industries Centre and Collector’s office/Tehsildar’s Office for 30 days.	<b>Complied.</b>
10.	These stipulations would be enforced among others under the provisions of Water (prevention and control of pollution) Act 1974, the Air (prevention and control of pollution) Act 1981, the Environment (protection)Act, 1986, the Public Liability (Insurance)Act, 1991 and EIA notification, 1994, including the amendments and rules made thereafter.	<b>Noted.</b>
11.	All other statutory clearance such as the approvals for storage of diesel from Chief Controller of Explosives, Fire department, Civil Aviation Department, Forest Conservation Act, 1980 and Wild life (protection)Act, 1972 etc. shall be obtained, as applicable by the project proponents from the respective competent authorities.	<b>Complied.</b>  PESO License (for Fuel Station) vide no. <b>P/WC/GJ/15/384(P 143282) is valid up to 31-12-2024.</b>
12.	The project proponent shall advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded environmental clearance and copies of clearance letters are available with the Gujarat Pollution Control board and may also be seen on the website of the ministry of Environment and Forest at <a href="http://www.envfor.nic.in">http://www.envfor.nic.in</a> .The advertisement should be made within 10 days from the date of receipt of clearance letter and a copy of the same should be forwarded to the Regional Office of this ministry at Bhopal.	<b>Complied.</b>  Advertisement for EC approval published in two local News Papers, <u>AVADH TIMES-AMRELI</u> (in Gujarati) and <u>FINANACIAL EXPRESS</u> (in English, all edition) on 11 April-2015.
13.	Environment clearance is subject to final order of the Hon’ble Supreme Court of India in the matter of Goa Foundation Vs. Union of	<b>Noted.</b>

**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
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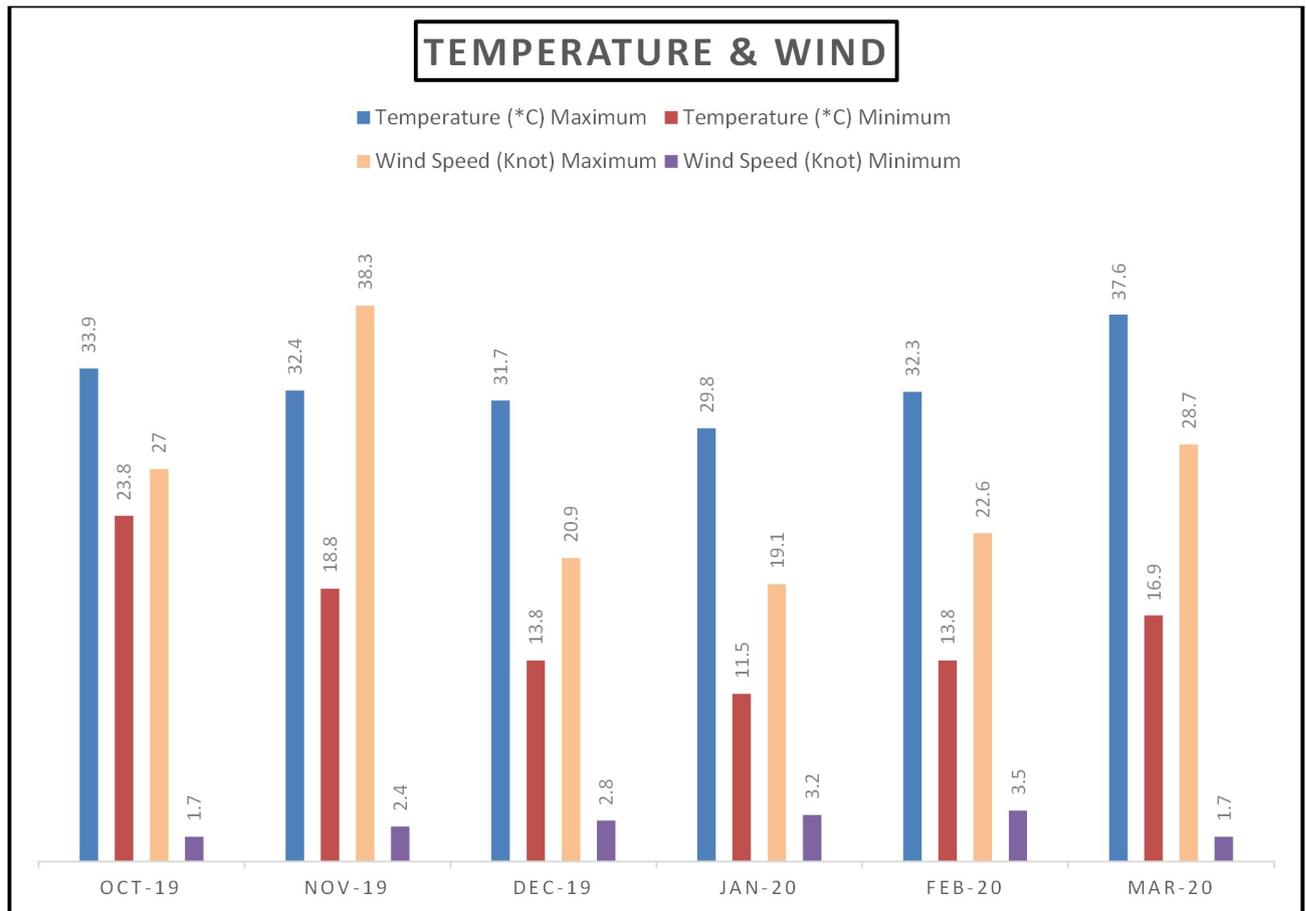
	India in Writ Petition (Civil)No.460 of 2004 as may be applicable to this project.	EC & CRZ Clearance is valid up to 04-June-2022.
14.	A copy of the clearance letter shall be sent by the proponent to be concerned Panchayat, Zilla Parishad/municipal Corporation, urban Local Body and the Local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	<p><b>Complied.</b></p> <p><a href="https://www.apmterminals.com/en/pipavav/CSR/environment">https://www.apmterminals.com/en/pipavav/CSR/environment</a></p>
15.	The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB	<p><b>Being Complied.</b></p> <p><a href="https://www.apmterminals.com/en/pipavav/CSR/environment">https://www.apmterminals.com/en/pipavav/CSR/environment</a></p> <p>Half yearly Compliance report is also being submitted in hard &amp; soft copy to the concerned authorities.</p> <p>Last half yearly compliance report submitted on 29-November-2019, vide No. APMT/ENV/MoEF&amp;CC/ EC&amp;CRZ/19-20/18.</p>
16.	The environmental statement for each financial year ending 31st March in FORM-V as is mandated to be submitted by the project proponent to the concerned State pollution Control Board as prescribed under the Environment (Protection)Rules, 1986 as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of MoEF by e mail.	<p><b>Being Complied.</b></p> <p>Last Environment Statement Report is submitted in Form-V to the concerned Authorities vide no. APMT/ENV/GPCB/CTO/19-20/09 dated; 31-July-2019.</p> <p><a href="https://www.apmterminals.com/en/pipavav/CSR/environment">https://www.apmterminals.com/en/pipavav/CSR/environment</a></p>

**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
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**METEOROLOGICAL DATA OF APM PORT PIPAVAV**

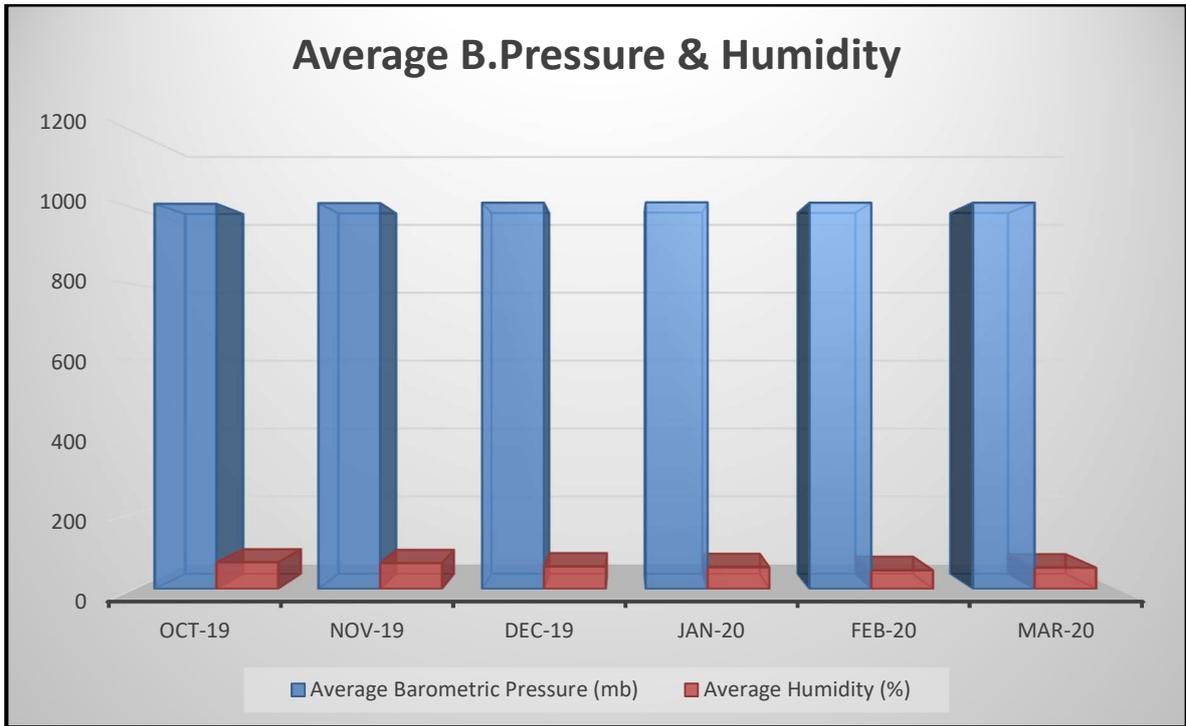
APM Port Pipavav has installed Meteorological Station at the roof of Marine Building, which are near to jetty. Details of Ambient Temperature, Wind Speed, Barometric Pressure, Humidity and Rain fall for the period Oct-19 to March-20 are as:

Month	Temperature (*C)		Wind Speed (Knot)		Average Barometric Pressure (Mb)	Average Humidity (%)	Total Rainfall (mm)
	Maximum	Minimum	Maximum	Minimum			
<b>Oct-19</b>	33.9	23.8	27	1.7	1012	70	34.27
<b>Nov-19</b>	32.4	18.8	38.3	2.4	1014	68	44.93
<b>Dec-19</b>	31.7	13.8	20.9	2.8	1015	59	0
<b>Jan-20</b>	29.8	11.5	19.1	3.2	1016	57	0
<b>Feb-20</b>	32.3	13.8	22.6	3.5	1015	49	0
<b>Mar-20</b>	37.6	16.9	28.7	1.7	1015	56	0

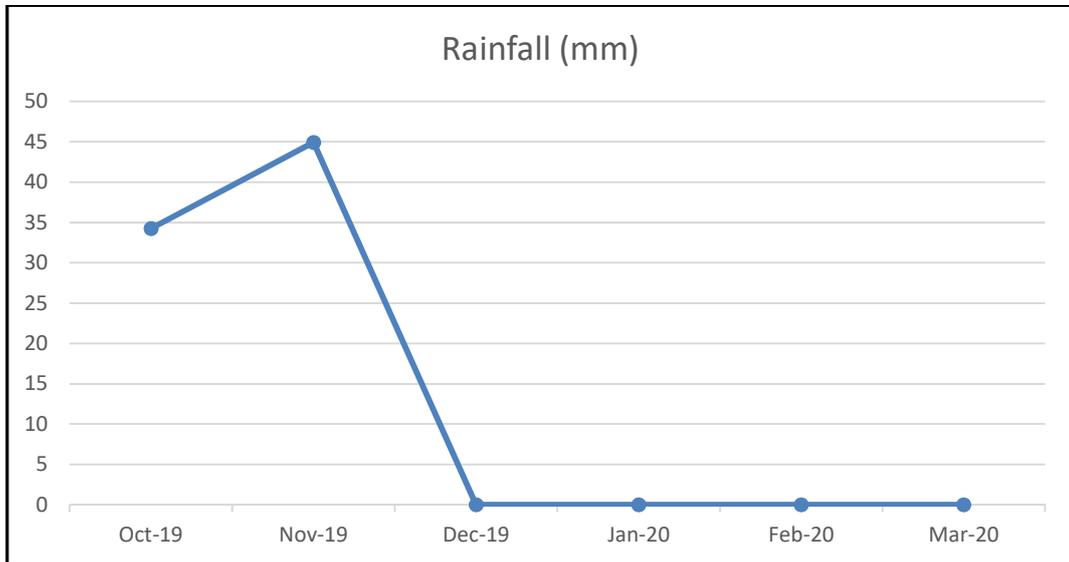


**Ambient Temperature & Wind Speed Data for the Period Oct-19 to March-2020**

**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
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**Average Barometric Pressure & Humidity Data**



**Rain Fall Data for the Period Oct-19 to March-2020**

**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
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**ENVIRONMENTAL MONITORING AT APM PORT PIPAVAV**

**1. Ambient Air Quality:**

The scenario of existing Ambient Air Quality in the study area has been assessed through a network of 04 Ambient Air Quality locations which is inside & outside the port premises. One station is in buffer zone area and the rest 3 are in core zone area. The monitoring network in the air quality surveillance program has been established based on wind direction i.e. 1 location in upwind direction, 2 locations are in downwind direction & 1 in crosswind direction.

A third party NABL & MOEF&CC accredited laboratory, M/s. Kadam Environmental Consultant has been entrusted for carrying out Environmental monitoring, analysis & reporting of environmental parameters at locations designated within and outside port premises.

Pre- calibrated Fine dust samplers have been used for carrying out ambient air quality monitoring in line with provisions of National Ambient Air Quality Standards-2009 (NAAQS). The parameters monitored are PM<sub>10</sub>, PM<sub>2.5</sub>, Sulphur dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>x</sub>) & Carbon Mono Oxide (CO).

- 2. Flue Gas Emission:** Stack emission for 3 no. DG sets, analyzed for the parameters Particulate Matter (PM), Oxides of Nitrogen (NO<sub>x</sub>) and Sulphur Di Oxide (SO<sub>2</sub>) and all the results are well within the CPCB/GPCB limits.
- 3. Noise Environment:** Noise level being monitored in Ambient, Work zone & for Occupational area at approx. 15 Locations on monthly basis. The noise levels at each location were recorded for 24 hours (Day & Night), using integrated sound level meter, and all the results are well within stipulated norms.
- 4. Water Quality:** The existing status of water quality for sea water and surface water was assessed by collecting the water samples from sea, Narmada river and water storage tank established at site. The overall water quality parameters have been found to be below the stipulated permissible limits.
- 5. Waste Water Quality:** Inlet & Outlet samples of sewage Treatment Plant of 25 KL and 450 KL are taken and analyzed, and all the parameters are well within the limits. Treated water is being re-used for Green Belt development within Port premises.
- 6. Solid waste Analysis:** Solid waste is being taken care by Amreli Municipal Corporation approved vendor on day to day basis from port area along with residential colony. Test report of solid waste is well within standards.
- 7. Soil Analysis:** Soil analysis is being carried out on half yearly basis and report is being submitted along Half yearly EC Compliance Report.
- 8. Fugitive Emissions:** Fugitive emissions are being monitored in CHP area and on Jetty along with Ammonia Monitoring in Fertilizer shed on quarterly basis.

**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
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**HAZARDOUS WASTE MANAGEMENT**

A well-defined hazardous waste storage yard is established at site as per the guidelines, all the waste materials collected from the site is being stored here in a designated place and from HW storage yard it is being sold out to CPCB/GPCB registered Re-cyclers/Re-processors within stipulated time line as per Hazardous Waste Management Rules. Hazardous Waste Management Committee is formed at site for the disposal of waste as per the guidelines. Details of Hazardous waste disposed from the site is being submitted through Annual HW return.

**BIO-MEDICAL WASTE MANAGEMENT**

Bio-medical waste is being disposed of through M/s. Distromed (BMWTSD Facility)-Rajkot, which are authorized by GPCB. Details of waste disposed from the site is being submitted through Annual BMW return.

**COVID-19:** For the collection of Masks, face shield, Aprons & Hand globes a bio-waste designated bins are placed at various places in the Port Premises area. Bins are already marked with Bio-Hazard symbol. Bio-Waste from bins are being collected in yellow color-coded bags and dispose to M/s. Distromed on every alternate day.

**Green Belt Development:**

A green belt is being developed along the port boundary, along the roads, in Residential Township & other available open spaces using native species avenue plantation as per the CPCB guidelines for curbing emission and providing aesthetic look.

2,52,742 trees covering an area of 257 acre, with survival rate of 80 % have already been planted till 31-March-2019. A nursery for growing the saplings, being used for plantation purposes, has also been established inside the port premises.

It is also planned to develop fruits garden & an herbal garden to create awareness & aesthetic view. Areas in front of various buildings and the entrance of port is being landscaped with green cover, shrubs, trees based on factors like climate, adaptability etc.

**Criteria used for selection of species for greenbelt:**

- Fast growing
- Thick canopy cover
- Perennial & evergreen
- Large leaf area index
- High sink potential
- Efficient in absorbing pollutants without affecting their growth
- Suitable for the local seasons

**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
Accorded by the MoEF&CC for Gujarat Pipavav Port Limited**



**Dense Forestation View**



**Greenery along the Roads**



**Plantation along the CHP area**



**Aesthetic View of The Internal Roads**

**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
Accorded by the MoEF&CC for Gujarat Pipavav Port Limited  
Pollution Control Measures at GPPL**



**Dust Suppression Water Reservoir**



**Dust Suppression System**



**Coal Settling Tank**



**Automatic Dust Sweeping Machine**



**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
Accorded by the MoEF&CC for Gujarat Pipavav Port Limited**



**Tarpaulin Covered Truck**



**Internal RCC Roads**



**Green Curtain in Coal Yard**



**Water Sprinkler in Coal yard**



**25 KLD STP at Port (Jetty Area)**



**450 KLD STP for Residential Area**

**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
Accorded by the MoEF&CC for Gujarat Pipavav Port Limited**



**60 Acre of Mangroves in Port Area 500 Ha of Mangroves in Surat & Bharuch Area**



**Hazardous Waste Storage Yard**



**Compliance Status Report for “Environmental Clearance & CRZ Clearance”  
Accorded by the MoEF&CC for Gujarat Pipavav Port Limited  
Green Belt Photographs**



**Mangroves Plantation within Port Area**



Certificate No.: TC-7099

# KADAM ENVIRONMENTAL CONSULTANTS

An ISO 9001-2015 Certified Company

(MoEF Approved)

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.

Phone : (O) 0265 - 6131000, 6131001



## ENVIRONMENTAL MONITORING REPORT

### APM Terminals Pipavav AMBIENT AIR QUALITY DATA November- 2019 to February- 2020

Months	Pollutants	Locations and Concentrations (in $\mu\text{g}/\text{m}^3$ )					
		AAQ1		AAQ2		AAQ3	
		Min	Max	Min	Max	Min	Max
Nov.2019	PM10	57	63	47	50	72	77
	PM2.5	36	38	22	25	43	47
	SO2	15.62	20.82	13.01	16.92	18.8	23.13
	NO2	22.91	26.45	15.37	18.99	25.79	30.59
	CO	1.781	1.982	1.505	1.478	0.781	1.089
Dec.2019	PM10	58	67	44	71	66	82
	PM2.5	31	40	26	40	35	47
	SO2	10.26	13.42	8.12	11.72	9.77	13.42
	NO2	14.21	16.29	11.95	16.97	15.55	18.76
	CO	1.72	1.989	1.307	1.667	0.777	1.389
Jan.2020	PM10	57	65	45	52	61	73
	PM2.5	31	43	23	35	33	44
	SO2	6.04	10.6	6.73	9.9	9.64	6.17
	NO2	11.72	21.18	11.38	20.35	11.53	14.95
	CO	1.423	1.559	0.875	1.101	0.734	0.956
Feb.2020	PM10	56	67	44	51	68	80
	PM2.5	31	40	25	29	41	46
	SO2	6.17	9.90	6.36	8.68	6.17	9.64
	NO2	12.47	19.78	13.15	17.54	10.20	16.50
	CO	1.256	1.569	0.619	0.876	0.858	1.036

AAQ = Ambient Air Quality

AAQ1 =Near Main Gate , AAQ2 = Near Admin Building , AAQ3 = Near Marine Building ,

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## ENVIRONMENTAL MONITORING REPORT

APM Terminals Pipavav				
AMBIENT AIR QUALITY DATA				
December-2019				
<b>D.G. Set Capacity</b>	:1250 KVA			
<b>Stack Height</b>	: 12M			
<b>Stack Dia</b>	: 300 MM			
<b>Platform level</b>	:			
Months	Pollutants	Locations and Concentrations (in mg/Nm <sup>3</sup> )		
		D.G.Set-1	D.G.Set-2	D.G.Set-3
December, 2019	PM	70	73	71
	SO <sub>2</sub>	6.57	7.34	6.78
	NO <sub>x</sub>	10.54	11.28	12.36
	CO	65.74	78.15	112.73
	Exit Velocity(m/s)	7.27	7.39	8.18

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## ENVIRONMENTAL MONITORING REPORT

### APM Terminals Pipavav AMBIENT NOISE MONITORING November - 2019 to February- 2020

Month/Locations	Day		Night	
	Min	Max	Min	Max
<b>Nov. 2019</b>				
Near Main Gate	59.5	66.6	59.5	66.1
Near Admin Building	54.7	65.7	52.5	58.2
Near Marine Building	59.3	63.8	54.6	60.1
<b>Dec.,2019</b>				
Near Main Gate	58.3	65.8	58.2	62.4
Admin building	56.2	62.4	55.3	57.2
Marine Building	60.5	66.1	54.2	59.4
<b>January, 2020</b>				
Near Main Gate	67.9	77.1	65.2	70.5
Admin building	63.2	66.1	61.5	64.2
Marine Building	64.5	69.6	64.1	67.1
<b>February, 2020</b>				
Near Main Gate	65.9	72.4	66.4	71.3
Admin building	58	62.8	58.2	61.2
Marine Building	68.3	75.1	68.0	70.9

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## ENVIRONMENTAL MONITORING REPORT

### APM Terminals Pipavav

#### Drinking Water Quality

(November-2019)

Parameters	Units	IS:10500 1991(Reaff:2012)	Monitoring Location		
			DW1	DW2	DW3
pH	..	6.5 to 8.5	7.89	7.69	7.45
Turbidity	NTU	1	< 0.1	< 0.1	< 0.1
Colour (Hazen Units)	Pt-CO	5	<1	<1	<1
Sulphates	mg/L	200	61	63	51
Fluoride	mg/L	1	<0.05	0.64	0.66
Nitrate	mg/L	45	1.88	1.06	0.76
Phenolic Compound	mg/L	0.001	<0.001	<0.001	<0.001
Aluminium	mg/L	0.03	<0.03	<0.03	<0.03
Hexavalent Chromium	mg/L	2	<0.02	<0.02	<0.02
Arsenic	mg/L	0.01	<0.01	<0.01	<0.01
Boron	mg/L	0.5	<0.05	<0.05	<0.05
Cyanide	mg/L	0.05	<0.05	<0.05	<0.05
Total Dissolved Solids	mg/L	500	360	405	452
Alkalinity	mg/L	200	25	40	50
Total Hardness	mg/L	200	220	180	180
Calcium	mg/L	75	22	29	18
Magnesium	mg/L	30	40	26	33
Residual Chlorine	mg/L	0.2	< 0.1	<0.1	<0.1
Chlorides	mg/L	250	72	95	135
Cadmium	mg/L	0.003	<0.003	<0.003	<0.003
Copper	mg/L	0.05	<0.03	<0.03	<0.03
Lead	mg/L	0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.3	<0.05	<0.05	<0.05
Zinc	mg/L	5	<0.03	<0.03	<0.03
Mercury	mg/L	0.001	<0.001	<0.001	<0.001
Manganese	mg/L	0.1	<0.02	<0.02	<0.02
Odour	..	Agreeable	Agreeable	Agreeable	Agreeable
Total Coliform	/100 ml	Shall not be detectable in	79	Absent	Absent
E. Coli	/100 ml		Present	Absent	Absent

DW= Drinking Water DW1=DW1 ( Water reservoir sample ,DW2= Drinking Water(UV Filter outlet), DW3 = Water Treatment Plant

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## ENVIRONMENTAL MONITORING REPORT



### APM Terminals Pipavav

#### Drinking Water Quality

(December - 2019)

Parameters	Units	IS:10500 1991(Reaff:2012)	Monitoring Location		
			DW1	DW2	DW3
pH	..	6.5 to 8.5	7.81	7.92	7.6
Turbidity	NTU	1	< 0.1	< 0.1	< 0.1
Colour (Hazen Units)	Pt-CO	5	<1	<1	<1
Sulphates	mg/L	200	57	64	43
Fluoride	mg/L	1	<0.05	<0.05	0.58
Nitrate	mg/L	45	1.7	1.88	0.68
Phenolic Compound	mg/L	0.001	<0.001	<0.001	<0.001
Aluminium	mg/L	0.03	<0.03	<0.03	<0.03
Hexavalent Chromium	mg/L	2	<0.02	<0.02	<0.02
Arsenic	mg/L	0.01	<0.01	<0.01	<0.01
Boron	mg/L	0.5	<0.05	<0.05	<0.05
Cyanide	mg/L	0.05	<0.05	<0.05	<0.05
Total Dissolved Solids	mg/L	500	356	368	480
Alkalinity	mg/L	200	46	54	60
Total Hardness	mg/L	200	220	230	188
Calcium	mg/L	75	24	28	14
Magnesium	mg/L	30	39	39	23
Residual Chlorine	mg/L	0.2	< 0.1	<0.1	<0.1
Chlorides	mg/L	250	68.49	73.38	147
Cadmium	mg/L	0.003	<0.003	<0.003	<0.003
Copper	mg/L	0.05	<0.03	<0.03	<0.03
Lead	mg/L	0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.3	<0.05	<0.05	<0.05
Zinc	mg/L	5	<0.03	<0.03	<0.03
Mercury	mg/L	0.001	<0.001	<0.001	<0.001
Manganese	mg/L	0.1	<0.02	<0.02	<0.02
Odour	..	Agreeable	Agreeable	Agreeable	Agreeable
Total Coliform	/100 ml	Shall not be detectable in	Absent	Absent	Absent
E. Coli	/100 ml		Absent	Absent	Absent

DW= Drinking Water DW1=DW1 ( Drinking water canteen ,DW2= Drinking Water(Rampara village), DW3 =

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## ENVIRONMENTAL MONITORING REPORT

### APM Terminals Pipavav Drinking Water Quality

(January - 2020)

Parameters	Units	IS:10500 1991(Reaff: 2012) Limits (Acceptable	Monitoring Location				
			DW1	DW2	DW3	DW4	DW5
pH	..	6.5 to 8.5	7.69	7.63	7.93	6.98	7.06
Turbidity	NTU	1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Colour (Hazen Units)	Pt-CO	5	<1	<1	<1	< 1	< 1
Sulphates	mg/L	200	56	56	65	67	66
Fluoride	mg/L	1	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrate	mg/L	45	1.53	1.64	2	1.82	1.7
Phenolic Compound	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Aluminium	mg/L	0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Hexavalent Chromium	mg/L	2	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	mg/L	0.5	<0.05	<0.05	<0.05	<0.05	<0.05
Cyanide	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Dissolved Solids	mg/L	500	344	372	340	388	396
Alkalinity	mg/L	200	43	44	56	52	55
Total Hardness	mg/L	200	210	230	220	200	230
Calcium	mg/L	75	22	24	20	22	28
Magnesium	mg/L	30	38	41	38	35	39
Residual Chlorine	mg/L	0.2	0.4	0.5	0.8	0.7	0.80
Chlorides	mg/L	250	73.38	70.94	78.27	63.6	58.71
Cadmium	mg/L	0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	0.05	<0.03	<0.03	<0.03	<0.03	<0.03
Lead	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.3	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc	mg/L	5	<0.03	<0.03	<0.03	<0.03	<0.03
Mercury	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	mg/L	0.1	<0.02	<0.02	<0.02	<0.02	<0.02
Odour	..	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Total Coliform	/100 ml	Shall not	Absent	Absent	Absent	Absent	Absent
E. Coli	/100 ml	be	Absent	Absent	Absent	Absent	Absent
<b>DW= Drinking Water DW1=DW1 Drinking Water (Canteen) ,DW2= Drinking Water(Marine Building), DW3 =Drinking water(Engineering workshop),DW4=Narmada treated water, DW5=Narmada Raw Water</b>							

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## ENVIRONMENTAL MONITORING REPORT

### APM Terminals Pipavav Drinking Water Quality

(February - 2020)

Parameters	Units	IS:10500 1991(Reaff:	Monitoring Location				
			DW1	DW2	DW3	DW4	DW5
pH	..	6.5 to 8.5	7.83	7.74	8.03	7.21	7.09
Turbidity	NTU	1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Colour (Hazen Units)	Pt-CO	5	<1	<1	<1	<1	<1
Sulphates	mg/L	200	58	59	67	68	72
Fluoride	mg/L	1	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrate	mg/L	45	1.64	1.82	1.94	1.58	1.64
Phenolic Compound	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Aluminium	mg/L	0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Hexavalent Chromium	mg/L	2	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	mg/L	0.5	<0.05	<0.05	<0.05	<0.05	<0.05
Cyanide	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Dissolved Solids	mg/L	500	372	384	368	416	392
Alkalinity	mg/L	200	45	47	54	52	55
Total Hardness	mg/L	200	230	210	200	200	210
Calcium	mg/L	75	24	20	26	22	26
Magnesium	mg/L	30	41	39	33	35	35
Residual Chlorine	mg/L	0.2	0.23	0.28	0.24	0.27	0.24
Chlorides	mg/L	250	70.94	73.38	71.91	62.62	68.6
Cadmium	mg/L	0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	0.05	<0.03	<0.03	<0.03	<0.03	<0.03
Lead	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.3	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc	mg/L	5	<0.03	<0.03	<0.03	<0.03	<0.03
Mercury	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	mg/L	0.1	<0.02	<0.02	<0.02	<0.02	<0.02
Odour	..	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Total Coliform	/100 ml	Shall not be	Absent	Absent	Absent	Absent	Absent
E. Coli	/100 ml		Absent	Absent	Absent	Absent	Absent

DW= Drinking Water, DW1=Drinking water(Canteen) ,DW2= Drinking Water (Marine building), DW3 = Drinking water (Engineering workshop). DW 4= Drinking Water(Narmada Reservoir Water Inlet), DW5= Drinking Water(Narmada Reservoir Treated water),

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## ENVIRONMENTAL MONITORING REPORT

### APM Terminals Pipavav

#### Ground Water Quality

(December - 2019)

Parameters	Unit(SI)	Monitoring Location	
		GW1	GW2
pH		7.41	7.51
Temperature	OC	25.4	26.1
Sulphates	mg/L	66	62
Ammonical Nitrogen	mg/L	<0.05	<0.05
COD	mg/L	<5	<5
BOD(3days at 27)OC	mg/L	<2	<2
Total Dissolved solids	mg/L	436	428
Suspended solids	mg/L	<2	<2
Oil and Grease	mg/L	<1	<1
Arsenic	mg/L	<0.01	<0.01
Total hardness	mg/L	182	170
Calcium Hardness	mg/L	84	82
Magnesium Hardness	mg/L	98	90
Chlorides	mg/L	14.68	12.28
Lead	mg/L	<0.01	<0.01
Mercury	mg/L	<0.001	<0.001
Total Chromium	mg/L	<0.02	<0.02
Total Coliform	MPN/100	Absent	Absent
E Coli.	N.A.	Absent	Absent

GW = Ground Water, GW1= Well Water (Rampara Village), GW2= Narmada water inlet

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## ENVIRONMENTAL MONITORING REPORT

### APM Terminals Pipavav

#### Surface Water Quality

(December - 2019)

Parameters	Unit(SI)	Monitoring Location
		SW1
pH		7.55
Temperature	0C	26.3
Sulphates	mg/L	64
Ammonical Nitrogen	mg/L	<0.05
COD	mg/L	<5
BOD(3days at 27)0C	mg/L	<2
Total Dissolved solids	mg/L	424
Suspended solids	mg/L	<2
Oil and Grease	mg/L	<1
Arsenic	mg/L	<0.01
Total hardness	mg/L	176
Calcium Hardness	mg/L	86
Magnesium Hardness	mg/L	90
Chlorides	mg/L	14.68
Lead	mg/L	<0.01
Mercury	mg/L	<0.001
Total Chromium	mg/L	<0.02

SW= Surface Water  
SW1=Bhatarvad river water

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## ENVIRONMENTAL MONITORING REPORT



### APM Terminals Pipavav

#### Surface Water Quality

(January- 2019)

Parameters	Unit(SI)	Monitoring Location
		SW1
pH		7.15
Temperature	0C	26.3
Sulphates	mg/L	71
Ammonical Nitrogen	mg/L	<0.05
COD	mg/L	<5
BOD(3days at 27)0C	mg/L	<2
Total Dissolved solids	mg/L	396
Suspended solids	mg/L	<2
Oil and Grease	mg/L	<1
Arsenic	mg/L	<0.01
Total hardness	mg/L	180
Calcium Hardness	mg/L	84
Magnesium Hardness	mg/L	92
Chlorides	mg/L	14.18
Lead	mg/L	<0.01
Mercury	mg/L	<0.001
Total Chromium	mg/L	<0.02
SW= Surface Water		
SW1=Bhatarvad river water		

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## ENVIRONMENTAL MONITORING REPORT

### APM Terminals Pipavav

#### SEWAGE WATER ANALYSIS REPORT

(November-2019 to February-2020)

STP Outlet	Concentration of Pollutants (STP Outlet)					
	pH	BOD	COD	TSS	Oil & Grease	Residual Chlorine
PERMISSIBLE LIMITS: mg/l	5.5 to 9.0	10.00	50.00	50.00	10.00	..
Nov.2019	6.82	14	48	15	<1	14.89
Dec.2019	6.78	17.00	53.00	12.00	<1	12.41
Jan.2020	6.86	13	49	17	<1	11.92
Feb.2020	6.79	9	61	19	<1	<1

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## ENVIRONMENTAL MONITORING REPORT

### APM Terminals Pipavav SEWAGE WATER ANALYSIS REPORT (November-2019 to February-2020)

STP Inlet	Concentration of Pollutants (STP Inlet)					
	pH	BOD	COD	TSS	Residual Chlorine	Oil & Grease
PERMISSIBLE LIMITS: mg/l	..	..	..			
Nov.2019	6.84	110	371	71	<0.1	<1
Dec.2019	6.63	103	354	68	<0.1	<1
Jan.2020	6.81	94	341	63	<0.1	<1
Feb.2020	6.94	90	358	67	<0.1	<1

For Kadam Environmental Consultants





Certificate No.: TC-7099

# KADAM ENVIRONMENTAL CONSULTANTS

An ISO 9001-2015 Certified Company

(MoEF Approved)

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.

Phone : (O) 0265 - 6131000, 6131001



## ENVIRONMENTAL MONITORING REPORT

### APM Terminals Pipavav OCCUPATIONAL NOISE MONITORING November-2019 to February-2020

Month/Locations	Day	
	Min	Max
<b>January, 2020</b>		
Medical center (silence Zone)	63.8	67.4
Township gate (Residential area)	55.1	67.9
Shopping Complex Commercial area)	55.2	74.2
Gate No.1 (Industrial area)	65.8	78.2
Railway Circle (Industrial area)	70.1	79.9
Bulk Jetty (Industrial area)	65.1	74.6
Cargo Jetty (Industrial area)	71.2	79.6
Fertilizer shed (Industrial area)	68.2	77.8
<b>February, 2020</b>		
Medical center (silence Zone)	65.0	60.2
Township gate (Residential area)	66.1	59.0
Shopping Complex Commercial area)	58.6	50.2
Gate No.1 (Industrial area)	69.1	56.8
Railway Circle (Industrial area)	76.1	70.1
Bulk Jetty (Industrial area)	70.3	64.2
Cargo Jetty (Industrial area)	75.3	70.0
Fertilizer shed (Industrial area)	69.0	60.2

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## ENVIRONMENTAL MONITORING REPORT

APM Terminals Pipavav OCCUPATIONAL NOISE MONITORING November-2019 to February- 2020		
Month/Locations	Day	
	Min	Max
<b>Jan-20</b>		
Engineering workshop	69.1	78.2
Marine office building	68	75.4
Security office	68.1	78.2
Fertilizer Shed inside	60.1	70.8

For Kadam Environmental Consultants





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## ENVIRONMENTAL MONITORING REPORT

<b>APM Terminals Pipavav</b>		
<b>OCCUPATIONAL NOISE MONITORING</b>		
<b>November-2019 to February- 2020</b>		
<b>Month/Locations</b>	<b>Day</b>	
	<b>Min</b>	<b>Max</b>
<b>Feb-20</b>		
Engineering workshop	67.8	71
Marine office building	66.4	72.3
Security office	68.2	73.2
Fertilizer Shed inside	74.6	69.9
Admin building	61.8	58

For Kadam Environmental Consultants



Lifting Global Trade™

**APM TERMINALS**

## Towards a Sustainable Environment



**Gujarat Pipavav Port Limited**

Oct 2019-March 2020



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**Tree Plantation:** Project area: 21 Villages

**Duration:** Oct 2019 to March 20

**Numbers of plants:** - 13902

**Reasons behind this activity:** -To protect environment, reduce carbon dioxide, healthy and green planet



**Brief description:** Trees and forests provide a habitat for many species of animals and plants. Tropical rainforests are among the most biodiversity habitats in the world. Trees provide shade and shelter, timber for construction, fuel for cooking and heating, and fruit for food as well as having many other uses.



**Impact:** Reducing erosion and moderating the climate, reduction of carbon dioxide from the atmosphere, shelter for related biotic resources, bio mass for manure and fuel.

Sr No.	Village	Plant Name	No farmers	No of Plant
1	Mota aagariya	Lamon	1	400
2	Kotadi	Pomegranate,gauva,Papaiya	5	2346
3	Japodar	Lamon	1	300
4	Dharanones	Mango	3	670
5	Zanjarda	Papaiya	3	230
6	Hindorna	Mango	1	235
7	Khakhbai	Papaiya	3	1790
8	Nava gariya	Papaiya	2	520
9	Vad	Mango	34	1740
10	Uchaiya	Mango	9	848
11	Chhatadiya	Mango	2	120
12	Charodiya	Coconet, mango, gava, Sapota, lamon	16	800
13	Dipadiya	Mango	1	100
14	Kumbhariya	gava, Sapota, lamon	2	1240
15	Barbtana	Papaiya	1	200
16	Dhadeshwar	Bambu	1	300
17	Kundaliyala	Coconet, mango, gava, Sapota, lamon	3	195
18	kadiyali	Coconet, mango, gava, Sapota, lamon	16	1008
19	Utiya	Coconet, mango, gava, Sapota, lamon	2	130
20	Vavera	Coconet, mango, gava, Sapota, lamon	2	130
21	Bhachadar	Mango	4	600
	total		112	13902

## **Green manuring and Mulching**

**Project area:** 26 Villages

**Duration:** Oct 2019 to March 2020

**Numbers of Farmers:** - 336 / 342 Hac. land

**Aims:** Enhancing biodiversity by improving soil fertility



**Activity:** After sowing of cotton dhaincha crop sowing between cotton rows. About 40-45 days dhaincha crop (before flowering stage) cutting/ dragging green leaves and green leaves incorporate into the soil.



### **Outcomes:**

- Improve soil properties and nutrient status
- Increase ground water table
- Enhance biodiversity
- Migration will be gradually reduced
- Improve soil fertility

Sr. No.	Villages	No farmers	Land Covered Hec	Sr. No.	Villages	No farmers	Land Covered Hec
1	Dhareshwar	17	17	16	Zanjarda	23	23
2	Dipadiya	17	17	17	Mota Aagariya	8	8
4	Barbtana	16	16	18	Rajparda	18	18
5	Kumbhariya	28	28	19	Kotadi	23	23
7	Mota Ringaniyala	6	6	20	Khakhbai	17	17
8	Charodiya	29	29	21	Nava Aagariya	18	18
9	Kundaliyala	20	20	22	Samuhkheti	7	7
11	Vad	19	19	23	Dharano Nes	6	12
13	Uchaiya	15	15	24	Mandardi	22	22
14	Chhatadiya	15	15	25	Japodar	5	5
15	Bherai	2	2	26	Katar	5	5
					total	336	342

**Mulching:**

**Project area:** 3 Villages **Duration:** Oct 2019 to March 2020

**Numbers of Farmers:** - 9 / 8 Hac. land

**Duration:** Oct 2019 to March 2020

**Reason behind this activity:** - To improve the quality of soil, Moisture, improve crop quality, mulching helps to reduce water loss, soil erosion and minimizes weed production.

**Brief description:** Mulches are materials placed over the soil surface to maintain moisture. Properly applied, mulch can give landscapes a handsome, well-groomed appearance. Mulch must be applied properly; if it is too deep or if the wrong material is used, it can cause significant harm to trees and other landscape plants.

**Impact:** maintain moisture, improve soil conditions, reduce water loss, and minimize weed competition.



Sr. No.	Villages	No farmers	Land Covered (Hec)
1	Zanjarada	2	2
2	Kumbhariya	3	3
3	Bherai Thavi	2	1
4	Charodiya	1	1
5	Barbtana	1	1
	Total	9	8



## **Grid locking green maturing mulching**

**Project area:** 16 Villages

**Duration:** Oct 2019 to March 2020

**Numbers of Farmers:** - 19 / 20.10 Hac. land

**Aim:** Increasing yield by conserving rain water and improving soil fertility



Activity: In cotton, each 2.5 – 2.5 ft making ridge and alternate 2.5 ft grid every 10 ft lock with furrow. Alternate 2.5 ft furrow cotton seed has sown. After sowing of cotton dhaincha crop sowing between cotton row. About 40-45 days dhaincha crop (before flowering stage) harvest and incorporate into the soil. Grid status per Acre Size: 8 ft x 1 ft x 0.5 ft, Total grids: About 1950, Per grid water capacity: About 112 lit



**Outcomes:** To conserve rain water in the ground up to 10 lacs/ha

- Increase moisture holding capacity
- Improve soil properties and nutrient status
- Increase ground water table, improve water quality, Enhance biodiversity

Sr. No.	Villages	No farmers	Land Covered (Hac)
1	Dharano Nes	1	1
2	Mota Aagariya	2	2
4	Kotadi	2	2
5	Rajaparda	3	3
7	Zanjarada	1	1
8	Dhareshvar	1	1
9	Dipadiya	1	1
11	Charodiya	1	1
13	Barbtana	3	4.1
14	uchiya	2	2
15	Vad	1	1
16	Kumbhariya	1	1
	total	19	20.1

## **Moisture meter for Scheduling irrigation**

**Project area:** 20 Villages

**Duration:** Oct 2019 to March 2020

**Numbers of Farmers:** - 90 / 282 Hac land areas.

**Aim:** To determine right time for irrigation

How to measure: Take reading with 9 cm depth and know moisture in farm. Recommend to irrigation when moisture comes 2.5 - 3 %.

### **Outcomes:**

- ❖ Saving water up to 8 lacs lit per hectare
- ❖ Require less water quantity
- ❖ Reduce water borne diseases, Better root growth
- ❖ Improve nutrient status by reducing soil salinity



Sr. No.	Villages	No farmers	Land Covered ( Hec)
1	Samuhkheti	2	6
2	Rajaparda	3	9
3	Mota Aagariya	1	4
4	Kotadi	3	10
5	Barpatodi	1	5
6	Dhareshwar	6	18
7	Dipadiya	4	12
8	Barbtana	9	27
9	Kumbhariya	13	39
10	Mota ringaniyala	6	18
11	Charodiya	9	28
12	Kundaliyala	7	22
13	Vad	2	5
14	Uchaiya	11	33
15	Chhatadiya	1	4
16	Bherai Thavi	6	24
17	kadiyali	2	5
18	Utiya	1	4
19	Vavera	1	3
20	Bhachadar	2	6
	Total	90	282

## **Check Dam**

**Project area:** 1 Villages

**Number of check dam:** -1

**Duration:** Oct 2019 to March 2020

**Reason behind this activity:** -Harvesting the rain water, help in increasing water level and reduce TDS.

**Brief Description:** A check dam is a small, sometimes temporary, dam constructed across a swale, drainage ditch, or waterway to counteract erosion by reducing water flow velocity .Check dams themselves are not a type of new technology rather; they are an ancient technique dating all the way back to the second century.

**Impact:** Increase water level, reduce TDS, Improve soil and quality.



Sr No.	Village	No farmers	Land Covered (Hec)
1	Mota Aagariya	19	89



## **Alternate furrow irrigation**

**Project area:** 13 Villages

**Duration:** Oct 2019 to March 2020

**Numbers of Farmers:** - 163 / 637 Hec land

**Aims:** Enhancing yield by saving water

**Outcomes:** Water saving up to 50% of Normal irrigation, Increase irrigation area

Sr. No.	Villages	No farmers	Land Covered ( Hec)	Sr. No.	Villages	No farmers	Land Covered ( Hec)
1	Dhareshwar	11	43.01	8	Uchaiya	4	15.64
2	Dipadiya	8	31.28	9	Chhatadiya	4	15.64
3	Barbtana	12	46.92	10	Bherai	2	7.82
4	Kumbhariya	19	74.29	11	Kadiyali	2	7.82
5	Mota Ringaniyala	16	62.56	12	Utiya	21	82.11
6	Charodiya	28	109.48	13	Vavera	8	31.28
7	Kundaliyala	28	109.48		total	163	637.33

## Laser Irrigation

**Project Area:** -12 Villages

**Duration:** Oct 2019 to March 2020

**Number of Laser Irrigation Unit:** - 38 & drip irrigation 28 Total 80 Hec.

Reason behind this activity: - Need to create awareness about laser irrigation, how to this system is useful the farmers.



**Brief description:** Laser Irrigation is the best drip irrigation system for small-plot farmers - affordable, high quality, and easy-to-use. Without the need for expensive and complex emitters, these systems are priced at least 50% lower than traditional commercially available drip irrigation systems. A small-plot family would be able to afford and purchase these systems that will produce enough to increase their income.

After buying this system, farmers can recoup their initial investment in less than 6 months, with significant increases in income over the next 3-5 years

Sr. No.	Village	No farmers Laser	Land Covered (Hec)	No farmers Drip Irrigation	Land Covered (Hec)	TOTAL farmers	Land Covered (Hec)
1	Barpatodi	1	1	1	1.5	2	2.5
2	Ganjavadar	2	2	2	2	4	4
3	Khakhbai	3	3	1	1	4	4
4	Kotadi	1	1	2	2	3	3
5	Samukhheti	2	2	2	2	4	4
6	Zanjarada	1	1	1	1.3	2	2.3
7	Kumbhariya	5	5	5	12	10	17
8	Mota Ringaniyala	20	20	1	2.5	21	22.5
9	Charodiya	1	1	2	2.8	3	3.8
10	Bherai Thavi	2	2	4	4	6	6
11	Kudaliyala	0	0	3	4.36	3	4.36
12	Barbtana	0	0	4	6.53	4	6.53
	total	38	38	28	41.99	66	79.99

## Varmiwash

**Project area:** 2 Villages

**Number of Varmiwash:** 3

**Duration:** Oct 2019 to March 2020

**Reason behind this activity:** - Turning farmers toward organic farming reduce cost of fertilizer.

**Brief description:** Varmiwash has gained popularity in both industrial and domestic settings because, as compared with conventional composting, it provides a way to treat organic wastes more quickly. It also generates products that have lower salinity levels that are therefore more beneficial to plant mediums.

**Impact:** Improve soil fertility and quality, reduce fertilizer and pesticide.



Sr. No.	Villages	No farmers	Land Covered ( Hec)	Sr. No.	Villages	No farmers	Land Covered ( Hec)
1	Mota Ringaniyala	1	2.3	9	Khakhbai	1	2
2	Dipadiya	4	7.93	11	Kotadi	4	8.1
4	Uchaiya	6	8.97	13	Mota agariya	2	4.2
5	Vavera	1	2.53	14	Nava Aagariya	1	2.13
7	Barpatodi	1	2.3	15	Rajaparda	2	4.23
8	Dharano Nes	1	2	16	Zanjarada	2	4.28
					total	26	50.97

Varmi wash **Liquid maturing** Used **106** farmers with **27 0** Hac. land. In cotton

**Benefits:** Reduce input cost, Pest repellent, Increasing quality base yield

**Outcomes:** Reduce cost of cultivation up to 15%, Improve soil heath Increasing quality base crop yield

## Training and Capacity Building



**Project Area:** -Rajula 34 villages

**Duration:** Oct 2019 to March 2020

**Number of Meeting: and Training** 472  
12294 farmers trained

**Reason behind this activity:** - Need to create awareness about environment, how to save the environment.

**Brief description:** Capacity building is the long-term, voluntary process of increasing the ability of a country to identify and solve its own problems and risks, and to

maximize its opportunities. It involves both the mobilization of human, institutional and other resources and their subsequent strengthening and development.



## School Program

**Project area:** 15 Villages

**Number of School Program:** 24

**Duration:** Oct 2019 to March 2020

**Reason behind this activity:** -Making youth to understanding about environment.

**Brief Description:** Environmental education is a lifelong process with the objective of imparting to its target groups in the formal and non-formal education sectors environmental awareness, ecological knowledge, attitudes, values, commitments for actions, and ethical responsibilities for the rational use of resources and for sound and sustainable development.

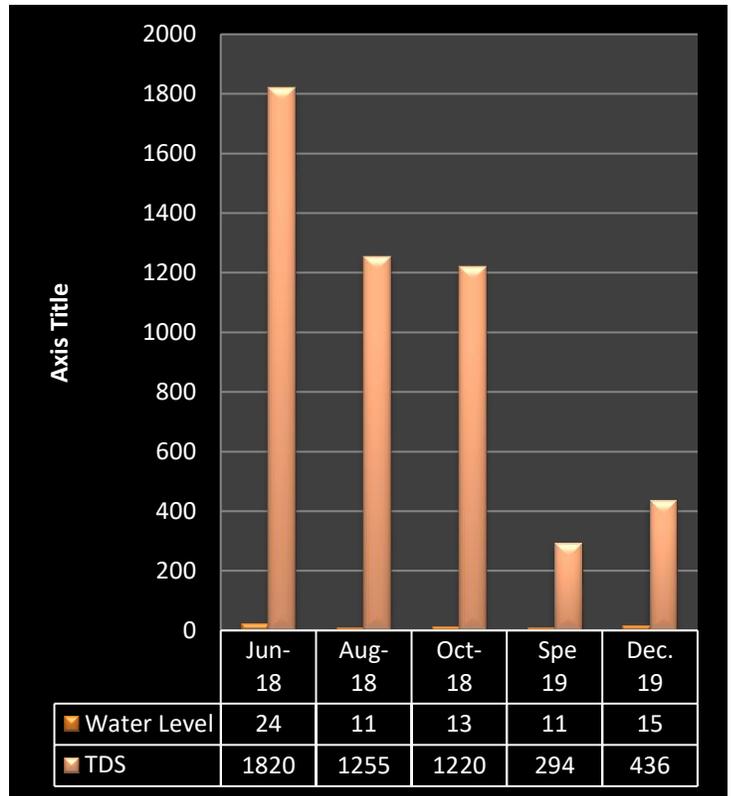
**Impact:** Understanding values of nature, environment education, and ethical awareness.



Sr No.	Village	Number of students	Quantity
1	Nani kherali	56	1
2	Vavera	103	2
3	Charodiya	56	1
4	Chattadiya	47	1
5	Barbtana	55	1
6	Dhareshwar	72	1
7	Vad	45	1
8	Bhachadar	42	1
9	Kumbhariya	210	3
10	Kadiyali	65	3
11	Nigala	55	3
12	Bherai	75	2
13	Rampra	150	2
14	Dipadiya	35	1
15	Devka	80	1
	TOTAL	1146	24

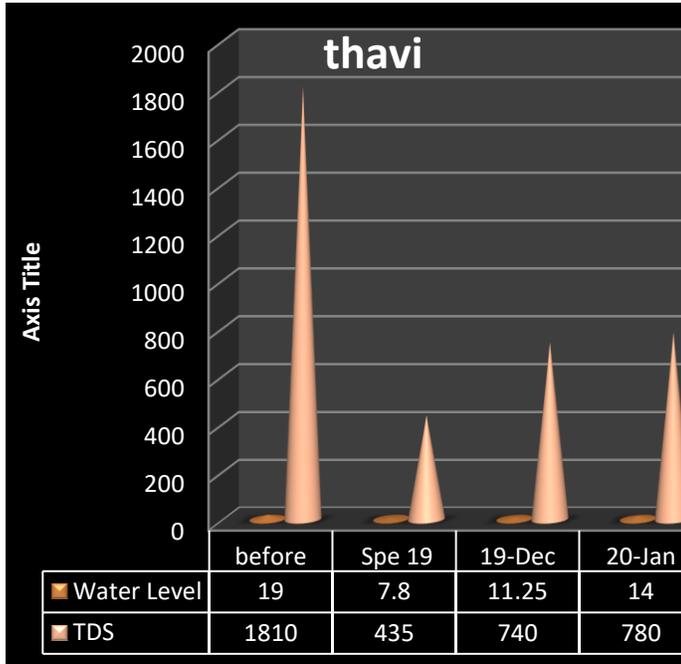
## Success story-1

Construction of check dam in Rampara and Kadiyali village with 5.50 mcft water storing capacity. 181 farmers total 250 ha land was benefitted. Currently, Cotton crop has been cultivated in 250 ha land. Cotton crop and Fodder and Wheat crop has been cultivated in 154 ha land during Rabi. Production increased with approx. income of Rs. 3.13 Corer (1 year) And increasing soil and water conservation will prevent the flowing rain water, improve soil fertility, increase in ground water table and reduction in water TDS. ( Cotton crop 250 ha\* 1600 kg/ per ha = 4.00.000 \*50 Rs = 2 corer + Fodder and Wheat crop has been cultivated in 154 ha land during Rabi 73.376 per ha = 1.13.00.000 /Total Income 3.13 corer )



## Success story-2

- Protection wall had built in Thavi Bherai village for protection from high sea waves and flowing rain water. 41 farmers total 210 ha land got benefitted. Currently, Cotton crop has been cultivated in 210-hectare land. Increase in production of Cotton, Groundnut crop to approx. income of Rs.24 lakhs and improving soil fertility and soil health, reduction in soil pH up to 0.5 and water TDS reduced up to 110.



## Kitchen Garden Initiative success story-3



**Project area:** 5 Villages

**Duration:** Oct 2019 to March 2020

To obtain nutritional food, Kitchen gardening activity was done among 332 BPL and Needy families. Increased production of Vegetable crop - approx. Amount Saved Rs. 4 lakhs

### kitchen garden

Sr. No.		No. of units Kharif	No. of units Rabi	total	Ridge gourd	Bottle gourd	Tomato	Chilli	Brinjal	Cluster bean	Okra	Bitter gourd	Chilli	Tomato	Brinjal	Total
1	Thavi	41	20	61												
	per unit production				9	9.5	5	4	6	6.5	4	4	2.5	3	3	56.5
	Total production				369	389.5	205	164	246	266.5	164	164	50	60	60	2138
	Rate (Rs/kg)				30	20	40	40	40	35	25	40	30	20	20	
	Total Income (Rs)				11070	7790	8200	6560	9840	9327.5	4100	6560	1500	1200	1200	67347.5
2	Divlo	51	15	66												
	per unit production				8	7.5	4	2	5	5.5	4	3	2	2.5	3	46.5
	Total production				408	382.5	204	102	255	280.5	204	153	30	37.5	45	2101.5
	Rate (Rs/kg)				30	20	40	40	40	35	25	40	30	20	20	340
	Total Income (Rs)				12240	7650	8160	4080	10200	9817.5	5100	6120	900	750	900	65917.5
3	Devpara	40	32	72												
	per unit production				10.5	10	7	4	8	8	6	5.5	2	3	3	67
	Total production				420	400	280	160	320	320	240	220	64	96	96	2616
	Rate (Rs/kg)				30	20	40	40	40	35	25	40	30	20	20	
	Total Income (Rs)				12600	8000	11200	6400	12800	11200	6000	8800	1920	1920	1920	82760
4	Kumbhariya	40	20	60												
	per unit production				11	11.5	9	6	11	10	7	7	4.5	4.5	5	86.5
	Total production				440	460	360	240	440	400	280	280	90	90	100	3180
	Rate (Rs/kg)				30	20	40	40	40	35	25	40	30	20	20	
	Total Income (Rs)				13200	9200	14400	9600	17600	14000	7000	11200	2700	1800	2000	102700
5	kadiyali		42	42												
	per unit production											3	4	4	11	
	Total production												126	168	168	462
	Rate (Rs/kg)												30	20	20	
	Total Income (Rs)												3780	3360	3360	10500
5	Nigala		54	54												
	per unit production											3	3	4	10	
	Total production												162	162	216	540
	Rate (Rs/kg)												30	20	20	
	Total Income (Rs)												4860	3240	4320	12420
	total	172	183	355	49110	32640	41960	26640	50440	44345	22200	32680	15660	12270	13700	341645

**Some of the CSR activities undertaken by APM Terminals, Gujarat Pipavav Port Ltd. related to COVID 19 and lock down are as follows.**

- 1. Food support to Needy and poor family:** We have distributed 1500 grocery kits among poor family belonging to Rampara, Divalo area, Devpara, Thavi area, Bherai, Kadiyali, Ningala, Kumbhariya, Pipavavdham and Shiyalbet villages.
- 2. Uninterrupted supply of drinking water through 12 water ATMs:** 12 water ATMs are functional during lockdown period too, they are regularly monitored for quality. They are sanitized regularly, and social distancing marks are placed at every plant.
- 3. Medical services for Livestock:** On an average we are attending to 6 medical cases daily related to cattle through mobile vet clinic. Yesterday at Shiyalbet a cow was very critical, our mobile vet clinic rushed to the spot and saved the cow.
- 4. Education and tele. counselling:** Mobile based education support is regularly provided to the students and parents and villagers of Rampara, Devpara, Bherai, Shiyalbet, Kadiyali, Kumbhariya and other villages of Rajula block.
- 5. Sanitizer and mask distribution:** for health workers as recommended by the Govt Medical Officer BHO, Rajula we are providing sanitizer and mask to all PHC as well as urban health Centre Rajula, as per requirement.
- 6. We are also providing instant food packets among truck drivers.**

