

adani

Ports and
Logistics

APSEZL/EnvCell/2019-20/046

Date: 26.11.2019

To

Additional Principal Chief Conservator of Forests (C),
Ministry of Environment, Forest and Climate Change,
Regional Office (WZ), E-5, Kendriya
Paryavaran Bhawan, Arera Colony,
Link Road No. - 3, Bhopal - 462 016.
E-mail: rowz.bpl-mef@nic.in

Sub : Half yearly Compliance report of Environment Clearance of "Single Point Mooring (SPM), Crude Oil Terminal (COT) and connecting pipes at Mundra Port, District Kachchh by M/s. Adani Ports & SEZ Limited"

Ref : Environment clearance granted to M/s Adani Ports & SEZ Ltd. vide letter dated 21st July, 2004 bearing no. J-16011/30/2003-IA-III.

Dear Sir,

Please refer to the above cited reference for the said subject matter. In connection to the same, it is to state that copy of the compliance report for the Environmental and CRZ Clearance for the period of April - 2019 to September - 2019 has been submitted through mail communication dated 26.11.2019 and acknowledge of the same with CD (Soft Copy of Compliance Report) is attached here for your records.

Thank you,

Yours Faithfully,

For, **M/s Adani Ports and Special Economic Zone Limited**

Avinash Rai
Chief Executive Officer
Mundra & Tuna Port

Encl: As above

Copy to:

- 1) The Director (IA Division), Ministry of Environment, Forests & Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi-110003
- 2) Zonal Officer, Regional Office, CPCB - Western Region, Parivesh Bhawan, Opp. VMC Ward Office - No. 10, Subhanpura, Vadodara - 390 023
- 3) Member Secretary, GPCB - Head Office, Paryavaran Bhawan, Sector 10 A, Gandhi Nagar - 382 010
- 4) Deputy Secretary, Forests & Environment Department, Block - 14, 8th floor, Sachivalaya, Gandhi Nagar - 382 010
- 5) Regional Officer, Regional Office GPCB (Kutch-East), Gandhidham, 370201

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Received
Dewan
26/11/19

कार्यालय/OFFICE

पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forests & Climate Change.
क्षेत्रीय कार्यालय(पश्चिम क्षेत्र)/Regional Office(Western Zone)
भोपाल (म.प्र.)/BHOPAL-462016



Environmental Clearance Compliance Report

of



SPM, Crude Oil Terminal and
Connecting Pipes

at

Mundra Port,
Dist. Kutch, Gujarat

of

Adani Ports and SEZ Limited

Period:

April-2019 to September-2019

	Adani Ports and SEZ Limited	From : Apr'19 To : Sep'19
Status of the conditions stipulated in Environment Clearance under CRZ notification		

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	Annexure – 2	Summary of Environment Monitoring Reports
	Annexure – 3	Cathodic Potential Monitoring report of SPM Onshore pipeline
	Annexure – 4	Details on CSR activities by Adani Foundation
	Annexure – 5	Environment Cell Organogram
	Annexure – 6	Detail on Budget spent for Environment Protection Measures

EC Compliance Report

	Adani Ports and SEZ Limited	From : Apr'19 To : Sep'19
Status of the conditions stipulated in Environment Clearance		

Half yearly Compliance report of Environment and CRZ Clearance of "Single Point Mooring (SPM), Crude Oil Terminal (COT) and connecting pipes at Mundra Port, District Kutch issued by MoEF vide letter no. J-16O11/30/2003-IA.III dated 21st July 2004.

Sr. No.	Conditions	Compliance Status as on 30-09-2019
A. Specific Condition		
1.	Mangrove afforestation in 25 ha of area, suitably identified in consultation with State Forest Department. The GAPL shall bear the cost of the said land as well as the cost of the plantation of mangroves and its sustenance and implant within 6 months from the date of clearance of this letter. Further, it shall be ensured that mangroves in the vicinity of the salt works are not affected due to the project.	<p>Complied.</p> <p>25 hectare of mangrove plantation with a cost of 10 Lakh is already completed near railway yard in consultation with Dr. Maity, Mangrove consultant of India.</p> <p>There are no salt works within the project area.</p> <p>It may be noted that to enhance the marine biodiversity, till date APSEZ has carried out mangrove afforestation in more than 2850 ha. area across the coast of Gujarat. Total expenditure for the same till date is INR 832 lakh. Details on mangroves afforestation & Green belt development carried out by APSEZ till date is annexed as Annexure – 1.</p>
2.	In addition to the mangrove plantation, GAPL should also take up massive green belt developments in 30 acres of land in and around the project in consultation with the Forest Department. Detailed plan indicating the area identified for the mangrove plantation as indicated at (i) above and for green belt development along with the financial outlay shall be provided to this ministry within 6 months from the date of receipt of this letter.	<p>Complied.</p> <p>During the course of development of the project, green belt was developed in 6.18 Hectares of land. Total 7607 trees were planted with the density of 1230 trees per hectare at a cost of Rs. 25.00 Lakh. This plantation was done in consultation with Gujarat Ecological Commission (as they are one of the authorized agencies of Dept. of Forest & Env. Dept., Govt. of Gujarat).</p> <p>In addition to this, various activities on green belt development and mangrove plantation are being carried out on regular basis by horticulture department. Total expenditures of the horticulture dept. for the financial year of 2019-20 (Till Sep'19) have been INR 547 lakh.</p> <p>It may be noted that, APSEZ has developed more than 467 ha. area as greenbelt with plantation of more than 8.7 Lacs saplings within the APSEZ area. Details on mangroves afforestation & Green belt development carried out by APSEZ till date is annexed as Annexure – 1.</p>

Status of the conditions stipulated in Environment Clearance

Sr. No.	Conditions	Compliance Status as on 30-09-2019
3.	No dredging activity shall be carried out.	Complied. Construction activities are completed & project is in operation stage. SPM is approximately 8.6 km inside the open sea from the shore where 30 m of draft is naturally available. Hence no dredging is required.
4.	No ground water should be tapped at the project site / within CRZ area.	Complied. No ground water is tapped at the project site. Water requirement is not on regular basis. However during operation and maintenance activity, approximately 100 liters per day water is being consumed for drinking purpose only.
5.	Adequate facilities as listed in National Oil spill Disaster Contingency Plan for the Mundra Port which includes firefighting equipment of 1200 cum/hr. spray capacity with 2 monitor fitted with the dolphin 2, 3, 4 and 5 oil spill dispersant foam liquid etc. should be maintained and put into operation immediately in case of oil spills.	Complied. Oil spill contingency plan is in place to handle Tier 1 level oil spills considering different accident scenarios, and the vulnerable areas are identified and mitigation plan is prepared. The OSCRP updated on 01.10.2018 is in place and implemented. The updated copy of Oil Spill Contingency Response Plan was submitted during last half yearly EC Compliance report for the period Oct'18 to Mar'19. Based on the oil spill modeling study, it has been observed that crude oil spill of 700 tons (Tier-I) will spread over an area having radius of around 400 m within 4hr. APSEZ already has facilities for combating a Tier-1 spill. Some of them are mentioned below: <ul style="list-style-type: none"> • 11 Tugs are fitted with Oil Spill Dispersant boom and proportionate pump to mix OSD and Sea water as required. • 10 Tugs are fitted with a fire curtain and remote controlled fire monitors. • Dolphin 11 has firefighting system of 1200 m³/hr. along with 20 ton lifting "A" frame and diving support facility. • The equipment are being kept in working condition. Routine inspection, maintenance and testing is performed as per the stipulated requirements.
6.	The duration of construction phase of the project should be kept to a maximum of 8 months to avoid impact on marine environment	Already complied. Not applicable at present. Construction activity is already completed and the project is in operation.

Status of the conditions stipulated in Environment Clearance

Sr. No.	Conditions	Compliance Status as on 30-09-2019																																														
	and birds as suggested by NIO.																																															
7.	It shall be ensured that there is no displacement of people, houses or fishing activity as a result of the project.	Not Applicable Location of SPM is unmanned (approximately 8.6 km inside the open sea from the shore) hence; there is no displacement of people, houses or fishing activity as a result of the project.																																														
8.	The project proponents must make necessary arrangements for disposal of solid wastes and for the treatment of effluents / liquid wastes. It must be ensured that the effluents / liquid wastes are not discharged into the seawater.	<p>Complied.</p> <p>Used oil / Spent oil generated is being sold to registered recyclers time to time.</p> <p>No other type of solid waste as well as no effluent or liquid waste are generated from operation of SPM or discharged into the sea water.</p> <p>In order to analyzed marine water quality, marine sampling is being carried out at a location nearby SPM by NABL and MoEF&CC accredited agency namely M/s. Pollucon Laboratories Pvt. Ltd. Summary of the same for duration from Apr'19 to Sep'19 is mentioned below.</p> <p>Sampling Locations & Frequency: 9 Nos. (Monthly)</p> <table><tr><th rowspan="2">Parameter</th><th rowspan="2">Unit</th><th colspan="2">Surface</th><th colspan="2">Bottom</th></tr><tr><th>Max</th><th>Min</th><th>Max</th><th>Min</th></tr><tr><td>pH</td><td>--</td><td>8.37</td><td>8.07</td><td>8.24</td><td>8.03</td></tr><tr><td>TSS</td><td>mg/L</td><td>382</td><td>182</td><td>364</td><td>218</td></tr><tr><td>BOD (3 Days @ 27 °C)</td><td>mg/L</td><td>12.8</td><td>3.0</td><td>5.0</td><td>2.0</td></tr><tr><td>DO</td><td>mg/L</td><td>6.8</td><td>6.0</td><td>6.8</td><td>5.6</td></tr><tr><td>Salinity</td><td>ppt</td><td>35.7</td><td>33.9</td><td>36.0</td><td>3.0</td></tr><tr><td>TDS</td><td>mg/L</td><td>36734</td><td>34327</td><td>37434</td><td>34218</td></tr></table> <p>The results depict that there is no damage to the marine ecology. Please refer Annexure – 2 for detailed analysis reports. Approx. INR 11.23 Lakh is spent for all environmental monitoring activities during the FY 2019-20 (Till Sep'19).</p>	Parameter	Unit	Surface		Bottom		Max	Min	Max	Min	pH	--	8.37	8.07	8.24	8.03	TSS	mg/L	382	182	364	218	BOD (3 Days @ 27 °C)	mg/L	12.8	3.0	5.0	2.0	DO	mg/L	6.8	6.0	6.8	5.6	Salinity	ppt	35.7	33.9	36.0	3.0	TDS	mg/L	36734	34327	37434	34218
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9.	The camps of labor shall be kept outside the Coastal Regulation Zone area. Proper arrangements for cooking fuel shall be made for the labor during construction	<p>Complied. Not applicable at present.</p> <p>Construction activities are completed and project is in operational phase.</p>																																														

Status of the conditions stipulated in Environment Clearance

Sr. No.	Conditions	Compliance Status as on 30-09-2019						
	phase so as to ensure that mangroves are not cut / destroyed for this purpose.							
10	Regular drills should be conducted to check the effectiveness of the on-site Disaster Management Plan. The recommendations made in the Environmental Management Plan and Disaster Management Plan, as contained in the Environmental Impact Assessment and Risk analysis reports of the project, shall be effectively implemented.	<p>Complied.</p> <p>Disaster Management plan is in place and implemented. Updated DMP was submitted to the MoEF & CC along with half yearly compliance report for the period from Apr – 2016 to Sep – 2016 and there is no further change.</p> <p>All the recommendations given in the report of NIO and Tata AIG Risk Management Services are implemented. Few examples are provided below.</p> <p>Few Marine EIA recommendations:</p> <table><tr><td>Temporary colonies of workforce should be located sufficiently away from the HTL with proper sanitation. Adequate arrangement of fuel supply to the workers should be made to discourage them from using mangroves for firewood.</td><td>Construction activity is already completed. Most of the construction labours were residing in the nearby villages where all basic facilities are easily available. However, for those residing near the construction site, infrastructure facilities such as water supply, fuel, sanitation, first aid, ambulance etc. were provided by APSEZL.</td></tr><tr><td>As a step towards improvement in marine environment quality, mangrove afforestation of intertidal mudflats should be encouraged through adequate institutional support.</td><td>25 hectare of mangrove plantation with a cost of 10 Lakh is already completed near railway yard in consultation with Dr. Maity, Mangrove consultant of India. Details on mangroves afforestation & Green belt development carried out by APSEZ till date is annexed as Annexure – 1.</td></tr><tr><td>The prevailing traffic control management of deep-sea ships navigating through the gulf needs thorough review and introduction of state of the art VTS should be considered.</td><td>APSEZ is practicing well defined traffic control procedure. A VTS service for Gulf of Kutch is provided by the VTS Gulf of Kutch, operated by Directorate General of Lighthouses and Lightships (DGLL), Govt. of India. Marine Control of APSEZ provides traffic update to vessels in Mundra Port Limit on VHF Channel- 77.</td></tr></table>	Temporary colonies of workforce should be located sufficiently away from the HTL with proper sanitation. Adequate arrangement of fuel supply to the workers should be made to discourage them from using mangroves for firewood.	Construction activity is already completed. Most of the construction labours were residing in the nearby villages where all basic facilities are easily available. However, for those residing near the construction site, infrastructure facilities such as water supply, fuel, sanitation, first aid, ambulance etc. were provided by APSEZL.	As a step towards improvement in marine environment quality, mangrove afforestation of intertidal mudflats should be encouraged through adequate institutional support.	25 hectare of mangrove plantation with a cost of 10 Lakh is already completed near railway yard in consultation with Dr. Maity, Mangrove consultant of India. Details on mangroves afforestation & Green belt development carried out by APSEZ till date is annexed as Annexure – 1.	The prevailing traffic control management of deep-sea ships navigating through the gulf needs thorough review and introduction of state of the art VTS should be considered.	APSEZ is practicing well defined traffic control procedure. A VTS service for Gulf of Kutch is provided by the VTS Gulf of Kutch, operated by Directorate General of Lighthouses and Lightships (DGLL), Govt. of India. Marine Control of APSEZ provides traffic update to vessels in Mundra Port Limit on VHF Channel- 77.
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	Adani Ports and SEZ Limited	From : Apr'19 To : Sep'19
Status of the conditions stipulated in Environment Clearance		

Sr. No.	Conditions	Compliance Status as on 30-09-2019	
			Arrival and departure information before arrival and departure respectively in Gulf of Kutch is provided to VTS information cell through agent or by directly sending mail to vtsmanagergulfofkutch@yahoo.com and vtsgok@yahoo.com
		Few Tata AIG Risk Assessment Recommendations:	
		There should be facilities of boom, skimmer, dispersant, diving suits, firefighting equipment and excellent communication facilities.	11 Dolphin tugs fitted with Oil Spill Dispersant boom and proportionate pump to mix OSD and Sea water as required; out of them 10 Dolphin Tugs are fitted with a fire curtain and remote controlled fire monitors.
		In the event of oil spillage the oil slick normally will be carried away by water current and wind. It is very difficult to identify oil slick patches by boats/vessels, hence it is suggested that GAPL may take help from coast guard/Navy for aerial surveillance in order to identify and monitor oil slick movement.	Oil spill contingency plan is in place to handle Tier 1 level oil spills considering different accident scenarios, and the vulnerable areas are identified and mitigation plan is prepared. Oil spill contingency plan updated & approved by coast guard was submitted during last half yearly EC Compliance report for the period Oct'18 to Mar'19.
11.	The entire stretch of the pipelines shall be buried underground except at the booster pumping station, which will be properly fenced and the station would be manned round the clock. The buried lines will be protected with anticorrosive coal tar based coating. The coating will be tested by high voltage detector in accordance with prescribed standards.	Complied. Entire SPM pipeline is buried underground. Total pipeline length is 15.4 km including 8.6 km inside the open sea and 6.8 km on landward side. Booster pump is not provided throughout the pipeline. However the material is transferred by using pumping system of respective vessels berthed at SPM. Anticorrosive 3 LPE coating is provided to the portion of onshore pipeline while offshore pipeline is also protected by concrete coating. For offshore pipeline, Cathodic Potential (CP) survey is being done once in five years. Last CP inspection of offshore pipeline done in Oct'2017 and report for the same was	

Status of the conditions stipulated in Environment Clearance

Sr. No.	Conditions	Compliance Status as on 30-09-2019								
		<p>provided along with EC compliance report submission for the period of Apr'17 to Sep'17.</p> <p>For onshore pipeline also CP survey is being done by APSEZ on monthly bases. Report of monitoring done within this compliance period is enclosed as Annexure – 3.</p>								
12.	Markers shall be installed at every 30 m to indicate the position of the line. Regular patrolling of the pipelines needs to be done. This will help in identifying any activity that have the potential to cause pipeline damage or to identify small leaks whose effects are too small to be detected by instrument.	<p>Complied.</p> <p>Markers are installed at every 30 m to indicate position of pipeline. Details of the same were submitted during last half yearly EC Compliance report for the period Oct'18 to Mar'19.</p> <p>Pressure at vessel and reception points of transfer line is being monitoring during operation to ensure no leakage in pipeline.</p> <p>Regular patrolling of pipeline is being done by APSEZL Security Department. Following mitigation plan is followed in case of small leaks leading to spills.</p> <table><tr><th>Activity</th><th>Adequacy of Measures</th></tr><tr><td>Hose Connection / Disconnection (liquid operation)</td><td>It is collected in deep tray in case of leakage. Stop the supply of liquid discharge.</td></tr><tr><td>Hose Connection / Disconnection (liquid operation)</td><td>Immediately stop the supply of liquid discharge. Marine break away coupling available for control of load.</td></tr><tr><td>Tanker discharge operation (SPM operation)</td><td>Emergency operation shut off (stopping the discharge)</td></tr></table>	Activity	Adequacy of Measures	Hose Connection / Disconnection (liquid operation)	It is collected in deep tray in case of leakage. Stop the supply of liquid discharge.	Hose Connection / Disconnection (liquid operation)	Immediately stop the supply of liquid discharge. Marine break away coupling available for control of load.	Tanker discharge operation (SPM operation)	Emergency operation shut off (stopping the discharge)
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Tanker discharge operation (SPM operation)	Emergency operation shut off (stopping the discharge)									
13.	There should be display boards at critical locations along the pipeline viz. road / rail /river crossings giving emergency instructions as well as contact details of GAPL. This will ensure prompt information regarding location of accident during any emergency. Emergency Information board should contain emergency instructions in addition to contact	<p>Complied.</p> <p>Display boards with emergency contact detail are provided at critical locations.</p> <p>Photographs of the same were submitted as part of the compliance report for the period from Oct'16 to March'17 and there is no farther change.</p>								

Status of the conditions stipulated in Environment Clearance

Sr. No.	Conditions	Compliance Status as on 30-09-2019
	details.	
14	During operation phase, proper precautions should be taken to avoid any oil spills and no oily wastes shall be discharged into the water bodies.	<p>Complied</p> <p>During operation, SPM team takes responsibility and actively supervises the operation. Inspection and maintenance activities are carried out regularly for prevention of any kind of oil spill at SPM.</p> <p>No liquid waste are generated / discharged from the project activity. In order to analyze marine water quality, marine sampling is being carried out at a location near SPM. Please refer condition no 8 for further details.</p>
15.	All conditions stipulated by the Forest and Environment Department, Government of Gujarat should be strictly implemented.	<p>Complied</p> <p>All the conditions stipulated by Forest and Environment Department are being complied. Point wise compliance report of CRZ recommendations issued vide letter No. ENV-10-2002-124-P (Part1) dated 8th October 2003 is enclosed as Annexure- A.</p>
16	All conditions stipulated in Gujarat Pollution Control Board vide their letter No. PC/NOC/381/1039 dated 8 th January, 2002 should be implemented.	<p>Complied.</p> <p>Consent to Operate (CC&A) was granted by GPCB based on the compliance of conditions of the No Objection Certificate (CtE). This CC&A is renewed from time to time based on its validity. The last renewal was obtained vide GPCB consent no. WH 86980 valid till 26th April, 2022. Copy of the same was submitted as part of compliance report for the duration of Apr'17 to Sep'17 and there is no further change.</p>
B. General Condition		
1	Construction of the proposed structures should be undertaken meticulously confirming to the existing Central / local rules and regulations. All the construction designs / drawings relating to the proposed construction activities must have approvals of the concerned State Government Department / Agencies.	<p>Complied. Not applicable at present.</p> <p>Construction activities are completed & project is in operation stage. Entire SPM pipeline is buried underground. Total pipeline length is 15.4 km including 8.6 km inside the open sea and 6.8 Km on landward side.</p> <p>Construction activities are carried out based on the approvals of the concerned state government department and prevailing laws.</p>
2	The project authorities	Complied.

Status of the conditions stipulated in Environment Clearance

Sr. No.	Conditions	Compliance Status as on 30-09-2019																																											
	should take appropriate community development and welfare measures for the villagers in the vicinity of the project site, including drinking water facilities. A separate fund should be allocated for this purpose.	<p>APSEZ is actively working with local community around the project area and provides required support for their livelihood and other concerns through the CSR arm – Adani Foundation. Brief information about activities in the main four persuasions is mentioned below. Please refer Annexure – 4 for full details of CSR activities carried out by Adani Foundation in the Mundra region.</p> <table><tr><th>Area</th><th>Activity</th></tr><tr><td>Community Health</td><td><ul style="list-style-type: none">11 Rural Clinic-8 from Mundra & 3 from Anjar block treated; 10889 patients.31 villages covered through Mobile healthcare unit 7902 patients benefited during six month.19 General Health Camp conducted - 12 General & 7 under Utthan project; 2873 patients treated.498 Needy patient benefited through Medical support Total amount of support is Rs.4,02,201/-.Sr. Citizen Project 8672 Card holders of 68 villages get benefit under this project. 4713 sr. citizen patients benefited during six month 30000 limit for three year per patients.First Medical College of Kutch district based on PPP model. It started from 2009. Affiliate with "Krantiguru Shyamji Krishna Verma Kutch University"750 bed– Largest Multi Specialty Hospital in kutch.Adani foundation, Adani Hospital and GAIMS have Jointly Celebrated "Arogya Saptah "8th to 14th August 2019 in Respect of 73th Independence of our country. – Approximately 4500 people will be direct beneficiaries of the program.<table><tr><th>Day</th><th>Date</th><th>Event Name</th><th>Beneficiaries</th></tr><tr><td>1</td><td>07/08/2019</td><td>Health check up at Orphan age, Bhuj</td><td>101</td></tr><tr><td>2</td><td>08/08/2019</td><td>Blood Donation Camp, Nakhatrana</td><td>55</td></tr><tr><td>3</td><td>09/08/2019</td><td>Pregnant Women health check up, Madhepar</td><td>50</td></tr><tr><td>4</td><td>10/08/2019</td><td>Surgical Mega Camp, Khavda</td><td>223</td></tr><tr><td>5</td><td>11/08/2019</td><td>General Health Camp, Palara Jail</td><td>139</td></tr><tr><td>6</td><td>12/08/2019</td><td>Ayushman Health Card Enrolment, Gorevali</td><td>52</td></tr><tr><td>7</td><td>13/08/2019</td><td>Awareness on women health, mukt jivan college, Bhuj</td><td>250</td></tr><tr><td>8</td><td>14/08/2019</td><td>Blood Donor Appreciation</td><td>36</td></tr></table></td></tr><tr><td></td><td>Sustainable Livelihood – Fisher folk</td><td><ul style="list-style-type: none">Average 70 KL of water was supplied to 983 households at 4 fisherman vasahat on a daily basis under Machhimar Shudhh Jal Yojana.Adani Foundation constructed four Balwadis for kids between the age group of 2.5 years to 5 years at different settlements under Vidya Deep Yojana. 125 children are benefiting from this scheme.115 students are getting benefit of vehicle transportation support from different Bandar.100% girls & 80% boys providing scholarship support to motivate and encourage fishermen boys and girls for higher education. Book support 49 Fisherman Students of Higher Secondary Standard (9to12) has been benefitted.Mangrove Plantation, moss cleaning, etc.: 4300 Man-days.Biodiversity Project:-Project started with two spices of mangroves which has good survival rate & Plantation at site– 70% Survival Total 4Hector Plantation.</td></tr></table>	Area	Activity	Community Health	<ul style="list-style-type: none">11 Rural Clinic-8 from Mundra & 3 from Anjar block treated; 10889 patients.31 villages covered through Mobile healthcare unit 7902 patients benefited during six month.19 General Health Camp conducted - 12 General & 7 under Utthan project; 2873 patients treated.498 Needy patient benefited through Medical support Total amount of support is Rs.4,02,201/-.Sr. Citizen Project 8672 Card holders of 68 villages get benefit under this project. 4713 sr. citizen patients benefited during six month 30000 limit for three year per patients.First Medical College of Kutch district based on PPP model. 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Affiliate with "Krantiguru Shyamji Krishna Verma Kutch University"750 bed– Largest Multi Specialty Hospital in kutch.Adani foundation, Adani Hospital and GAIMS have Jointly Celebrated "Arogya Saptah "8th to 14th August 2019 in Respect of 73th Independence of our country. – Approximately 4500 people will be direct beneficiaries of the program. <table><tr><th>Day</th><th>Date</th><th>Event Name</th><th>Beneficiaries</th></tr><tr><td>1</td><td>07/08/2019</td><td>Health check up at Orphan age, Bhuj</td><td>101</td></tr><tr><td>2</td><td>08/08/2019</td><td>Blood Donation Camp, Nakhatrana</td><td>55</td></tr><tr><td>3</td><td>09/08/2019</td><td>Pregnant Women health check up, Madhepar</td><td>50</td></tr><tr><td>4</td><td>10/08/2019</td><td>Surgical Mega Camp, Khavda</td><td>223</td></tr><tr><td>5</td><td>11/08/2019</td><td>General Health Camp, Palara Jail</td><td>139</td></tr><tr><td>6</td><td>12/08/2019</td><td>Ayushman Health Card Enrolment, Gorevali</td><td>52</td></tr><tr><td>7</td><td>13/08/2019</td><td>Awareness on women health, mukt jivan college, Bhuj</td><td>250</td></tr><tr><td>8</td><td>14/08/2019</td><td>Blood Donor Appreciation</td><td>36</td></tr></table>	Day	Date	Event Name	Beneficiaries	1	07/08/2019	Health check up at Orphan age, Bhuj	101	2	08/08/2019	Blood Donation Camp, Nakhatrana	55	3	09/08/2019	Pregnant Women health check up, Madhepar	50	4	10/08/2019	Surgical Mega Camp, Khavda	223	5	11/08/2019	General Health Camp, Palara Jail	139	6	12/08/2019	Ayushman Health Card Enrolment, Gorevali	52	7	13/08/2019	Awareness on women health, mukt jivan college, Bhuj	250	8	14/08/2019	Blood Donor Appreciation	36		Sustainable Livelihood – Fisher folk	<ul style="list-style-type: none">Average 70 KL of water was supplied to 983 households at 4 fisherman vasahat on a daily basis under Machhimar Shudhh Jal Yojana.Adani Foundation constructed four Balwadis for kids between the age group of 2.5 years to 5 years at different settlements under Vidya Deep Yojana. 125 children are benefiting from this scheme.115 students are getting benefit of vehicle transportation support from different Bandar.100% girls & 80% boys providing scholarship support to motivate and encourage fishermen boys and girls for higher education. 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Status of the conditions stipulated in Environment Clearance

Sr. No.	Conditions	Compliance Status as on 30-09-2019																														
			<ul style="list-style-type: none">• Sea Weed Culture: Sea Weed Culture is going on. Seed bank preparation is going on under guidance of VRTI.																													
	Education		<ul style="list-style-type: none">• Adani foundation adopted 17 government school located at Mundra Taluka under the project 'UTTHAN' a drive of quality education.• One teacher–One school + Sports teacher + IT teacher• 'IT on Wheel 'Van with 35 laptops and computer instructor make students more tech savvy and spreading the digital and technology knowledge amongst the younger generation.• With the intervene of our Sports teacher in all Utthan Schools successfully enrolled 500+ students in Khel Mahakumbh.• Utthan Sahayak +1222 students from High school & Higher secondary of 6 villages celebrate Fifth International Yoga Day.• Adani Vidya Mandir: provide “cost-free” education to meritorious students coming from challenging economic background, who have priceless treasures but have been under achievers due to situation. In year 2019-20 450 students are studying.• 250 institutes and 15,329 beneficiaries have made inspirational visit of Adani Port, Power abd Wilmar during this six months under Project UDAAN.																													
	Rural Infrastructure		WORK COMPLETED <ul style="list-style-type: none">• Water Conservation Works:<ul style="list-style-type: none">✓ Pond deepening work in Baroi, Luni & Zarpara villages✓ Mota Bhadiya Check Dam desilting work✓ Lakhpat Godhatal dam desilting work✓ Mota Bhadiya artificial bore well recharge -2 no's• Protection Compound wall at Navinal Village• Garden development – Hanuman Temple Baroi• Fixing of Street Light<ul style="list-style-type: none">✓ 30 LED Street light Bhopawandh✓ 20 LED Street light Mundra✓ 50 LED Street Light at Borara• Construction of Prayer Shed at AVMB• Garden Development work at-Bhujpur Village.• Construction of R.O. Plant Room at Primary School sadau Village• Drainage maintenance.• Renovation of ITI at Mundra work in Progress. WORK INPROGRESS <ul style="list-style-type: none">• Renovation of Bavadi at Bavadi Bandar• DevelopmentofCommunityTrainingHallatMundra&Goyarsama• Fisherman Room at Navinal & Zarpara Vasahat																													
Skill Development		<ul style="list-style-type: none">• Soft skill training – 437 Nos.• Technical Training – 206 Nos. <table><tr><td></td><td>Digital Literacy</td><td>Self Employed Tailor</td><td>Beauty Therapist</td><td>Spoken English</td><td>Junior Operator Crane</td><td>Excel Training</td><td>RTG Crain Operator</td></tr><tr><td>Male</td><td>189</td><td>0</td><td>0</td><td>45</td><td>60</td><td>11</td><td>24</td></tr><tr><td>Female</td><td>156</td><td>22</td><td>100</td><td>36</td><td>0</td><td>0</td><td>0</td></tr></table>								Digital Literacy	Self Employed Tailor	Beauty Therapist	Spoken English	Junior Operator Crane	Excel Training	RTG Crain Operator	Male	189	0	0	45	60	11	24	Female	156	22	100	36	0	0	0
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Budget for CSR Activity for the FY 2019-20 is to the tune of INR 2043 lakh. Out of which, Approx. INR 745 lakh are spent during this compliance period Apr'19 to Sep'19.																																

Status of the conditions stipulated in Environment Clearance

Sr. No.	Conditions	Compliance Status as on 30-09-2019
3	To meet any emergency situation, appropriate fire – fighting system should be installed. Appropriate arrangements for uninterrupted power supply to the environment protection equipment and continuous water supply for the firefighting system should be made.	<p>Complied.</p> <p>Tug (Dolphin-11) has firefighting system of 1200 m3/hr. along with 20 ton lifting “A” frame and diving support facility for support at offshore.</p> <p>With respect to onshore facilities valve station, pumping station and transportation pipeline , foam base fire tender is available .</p> <p>With respect to onshore facilities valve station , pumping station and transportation pipeline, foam base fire tender, fire water network is available Fire-fighting system has been installed and maintained to meet emergency situations. Additionally for emergency, DG Set is provided for fire water pumps to ensure continuous water supply for firefighting purpose. Detail information on firefighting facility available at APSEZL was submitted as part of the compliance report for the period from Oct'16 to March'17 and there is no farther change.</p>
4	A separate Environment Management Cell with suitably qualified staff to carry out various environment related functions should be set up under the charge of a Senior Executive who will report directly to the Chief Executive of the Company.	<p>Complied.</p> <p>M/s APSEZ has a well structured Environment Management Cell, staffed with qualified manpower for implementation of the Environment Management Plan. The Environment Management Cell is headed by Sr. Manager who directly reports to the top management.</p> <p>Environment Management Cell Organogram is attached as Annexure – 5.</p>
5	The funds earmarked for environment protection measures should be maintained in a separate account and there should be no diversion of these funds for any other purpose. A year wise expenditure on environmental safeguards should be reported to this Ministry's Regional	<p>Complied.</p> <p>Separate budget for the Environment Protection measures is earmarked every year. All environmental and horticulture activities are considered at group level and budget allocation is also done accordingly. No separate bank account is maintained for the same however, all the expenses are recorded in advanced accounting system of the organization.</p> <p>Budget for environmental management measures (including horticulture) for the FY 2019-20 is to the tune of INR 1042 lakh. Out of which, Approx. INR 727 lakh are spent during this compliance period i.e. Apr'19 to Sep'19. Detailed breakup of</p>

Status of the conditions stipulated in Environment Clearance

Sr. No.	Conditions	Compliance Status as on 30-09-2019
	Office at Bhopal.	the expenditures for the past 3 years is attached as Annexure – 6.
6	Full support should be extended to the officers of this Ministry's Regional Office at Bhopal and the officers of the Central and State Pollution Control Board by the project proponents during their inspection for monitoring purposes, by furnishing full details and action plans including the action taken reports in respect of mitigative measures and other environmental protection activities.	<p>Complied</p> <p>APSEZL is always extending full support to the regulatory authorities during their visit to the project site.</p> <p>Last visit of Regional Office, GPCB was done on 20.07.2017 for Main port. APSEZL has submitted the reply to the site visit report vide letter dated 04.08.2017 incorporating details of action taken in respect of the observations of the GPCB representative. Details were submitted during half yearly EC Compliance report for the period Apr'17 to Sep'17.</p> <p>There was no visit carried out by any government authority during the compliance period of Apr'19 to Sep'19 with respect to SPM project.</p>
7	In case of deviation or alteration in the project including the implementing agency, a fresh reference should be made to this Ministry for modification in the clearance conditions or imposition of new one for ensuring environmental protection. The project proponents should be responsible for implementing the suggested safeguard measures.	<p>Point noted.</p> <p>There is no change in the approved project proposal.</p>
8	This Ministry reserves the right to revoke this clearance, if any of the conditions stipulated are not complied with to the satisfaction of this	Point noted.

Status of the conditions stipulated in Environment Clearance

Sr. No.	Conditions	Compliance Status as on 30-09-2019
	Ministry.	
9	This Ministry or any other competent authority may stipulate any other additional conditions subsequently, if deemed necessary, for environmental protection, which should be complied with.	Point noted.
10	A copy of the clearance letter should be marked to the concerned Panchayat / local NGO, if any, from whom any suggestion / representation has been received while processing the proposal.	Not applicable at present
11	State Pollution Control Board / Committee should display a copy of the clearance letter at the District Industries Center and Collector's Office/ Tehsildar's Office for 30 days from the date of receipt of this letter.	Not Applicable This condition does not belong to project proponent.
12	The project proponent should advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned informing that the project has been accorded environmental clearance and copies of	Already Complied.

Status of the conditions stipulated in Environment Clearance

Sr. No.	Conditions	Compliance Status as on 30-09-2019
	clearance letter are available with the Gujarat Pollution Control Board and may also be seen at the website of the Ministry of Environment & Forests at http://www.envfor.nic.in/	
13	The project proponents should inform regional Office Bhopal as well as the Ministry, the date of financial closure and final approval of the project by the concerned authority and the date of start of work.	Already Complied
14	The project proponent will obtain Forest clearance for any stretch of land if it passes through the forest land.	Not Applicable No forest land was involved in the project.
15	So as to maintain ecological features and avoid damage to the ecosystem, movement of vehicles in the Inter Tidal Zone shall be restricted to minimum.	Complied. All activities are carried out as per the permissions obtained from competent authorities. No unauthorized movement of vehicles is allowed in the intertidal zone.
16	Since the pipeline passes along mangrove areas and the mud flats of Mundra area, the project proponents will ensure adequate protection to mangroves.	Complied. Not applicable at present Construction activities are completed & project is in operation stage. Please refer to specific condition no 1 for detailed reply regarding mangrove plantation activity.
17	Budgetary break up for Environmental Management Plan for	Complied. Please refer to general condition no 5 for detailed reply

	Adani Ports and SEZ Limited	From : Apr'19 To : Sep'19
Status of the conditions stipulated in Environment Clearance		

Sr. No.	Conditions	Compliance Status as on 30-09-2019
	the project to be mentioned.	regarding budgetary break up.

Annexure – A

	Adani Ports and SEZ Limited	From : Apr'19 To : Sep'19
Status of the conditions stipulated under CRZ Recommendation		

Half yearly Compliance report of CRZ recommendation for "SPM,COT and connecting pipeline at Mundra Port, Dist. Kutch in Gujarat" issued by DoEF, GOG vide letter no. ENV-10-2002-124-P (Part1) dated 8th October 2003.

Sr. No.	Conditions	Compliance Status as on 30-09-2019
1	The provision of the CRZ notification of 1991 and its amendments issued from time to time shall be strictly complied with by the GAPL.	Complied. Construction activities are completed and the project is in operation phase. All stipulations with respect to the CRZ notification and its subsequent amendments are complied with.
2	This recommendation is only for those activities proposed to be commissioned before the end of the year 2008 as mentioned in the bar chart submitted by GAPL.	Point noted. Construction activities are completed and the project is in operation phase.
3	A separate clearance shall be obtained by the GAPL for construction of the SPM No. 3 and 4, corresponding pipelines and COTs after demonstrating the compliance of the conditions, ecological upliftment activities undertaken successfully and mitigative measures implemented while developing the SPM no.1 and corresponding COT. A regional EIA shall also be commissioned immediately by the GAPL and all future development should be based on the outcome of the said regional EIA only.	Point Noted. APSEZL has only developed SPM no. 1 so far. SPM no. 3 and 4 are not developed yet and required permissions for the same will be obtained by following procedures mentioned in respective notifications.
4	Before commissioning of the construction activities, the construction design and pipeline alignment shall be validated/ approved by National Institute Oceanography to ensure that there is no negative	Complied. Construction activities are completed and the project is in operation phase. The EIA report was prepared by NIO and specific design considerations were taken into account for carrying out various studies for preparation of the same. Findings of the studies were considered before commissioning of the

	Adani Ports and SEZ Limited	From : Apr'19 To : Sep'19
Status of the conditions stipulated under CRZ Recommendation		

Sr. No.	Conditions	Compliance Status as on 30-09-2019
	impact on the coastal morphology, hydrodynamics and ecological systems including the corals, if any. The mitigative measures as may be suggested by the NIO for this purpose shall be implemented by the GAPL.	<p>construction activities.</p> <p>There are no corals present at the project site.</p>
5	A comprehensive EIA shall be prepared and submitted to this Department by the GAPL, before commissioning of the SPM. All the suggestions for environmental protection /management that may be given in the comprehensive EIA shall be implemented by the GAPL.	<p>Complied.</p> <p>EIA study has been completed and report is already submitted to MoEF&CC and other concerned authorities. Based on the same, Environment and CRZ clearance was granted by MoEF&CC.</p> <p>However, APSEZ has appointed a NABET accredited consultant M/s. Cholamandalam MS Risk Services Limited to prepare a cumulative impact assessment report for the entire Mundra region. The study is recently concluded and the final report is submitted vide our letter dated 30.04.2018 to GCZMA and MoEF&CC for their consideration. Details of the same were submitted along with half yearly EC Compliance report for the period Apr'18 to Sep'18.</p>
6	The ground water shall not be tapped in any case to meet with the water requirements during construction and/or operation phases.	<p>Complied.</p> <p>APSEZ does not draw any ground water for the water requirement. Present source of water for entire port and SEZ is desalination plant and/or Narmada water through Gujarat Water Infrastructure Limited.</p> <p>Location of SPM is unmanned (approximately 8.6 km inside the open sea from the shore) hence no operation or maintenance activities require use of water on regular basis.</p>
7	The GAPL shall ensure that the free flow of water in the intertidal area is not hampered due to proposed construction activities for pipeline corridor as well as other activities including the COT. Further, it shall be	<p>Complied.</p> <p>Construction activity is already completed and the project is in operation phase.</p> <p>Free flow of water in the intertidal area is not hampered due to any operational activities. There are no filling or reclamation activities done at any of the creeks or mangrove areas in the vicinity of the project. As per recent</p>

Status of the conditions stipulated under CRZ Recommendation

Sr. No.	Conditions	Compliance Status as on 30-09-2019
	ensured by the GAPL that the nearby mangroves are not at all affected due to proposed development activities specifically the COT.	<p>bathymetry study carried out by NCSCM, it can be concluded that there are sufficient depths at the creek mouths and all creek mouths are open allowing flushing of water.</p> <p>NCSCM final report on comprehensive and integrated plan for preservation and conservation of mangroves and associated creeks in and around has been submitted to the concerned authorities i.e. MoEF&CC, New Delhi and GCZMA, Gandhinagar vide our letter dated 04.06.2018 and details of the same were submitted along with half yearly EC Compliance report for the period Apr'18 to Sep'18.</p>
8	The GAPL shall take up massive mangroves plantation activities in addition 25 Ha. of area suitably identified in consultation with the office of the Principal Chief Conservator of Forests, GoG, as well as this Department. The GAPL shall bear the cost of the said land as well as the cost of the plantation of mangroves & its sustenance for a reasonable period of time.	<p>Complied.</p> <p>Construction activities are completed & project is in operation stage. Please refer to specific condition no 1 of the compliance of EC and CRZ clearance for detailed reply regarding mangrove plantation activity.</p>
9	In addition to the mangroves plantation, the GAPL shall also take up massive greenbelt development in and around the project site in consultation with the Forest Department.	<p>Complied.</p> <p>Construction activities are completed & project is in operation stage. Please refer to specific condition no 2 of the compliance of EC and CRZ clearance for detailed reply regarding greenbelt development activity.</p>
10	The GAPL shall provide financial contribution as many as decided by this department for any common study like carrying capacity for the Gulf of Kachchh as well as for any common facilities including	<p>Complied.</p> <p>Necessary financial support will be provided on hearing from MOEF&CC.</p> <p>APSEZ is practicing well defined traffic control procedure.</p> <p>A VTS service for Gulf of Kutch is provided by the VTS Gulf</p>

	Adani Ports and SEZ Limited	From : Apr'19 To : Sep'19
Status of the conditions stipulated under CRZ Recommendation		

Sr. No.	Conditions	Compliance Status as on 30-09-2019
	Vessels Traffic Management System in the Gulf of Kachchh, for the purpose of the environment protection/management.	of Kutch, operated by Directorate General of Lighthouses and Lightships (DGLL), Govt. of India. Marine Control of APSEZ provides traffic update to vessels in Mundra Port Limit on VHF Channel- 77. Arrival and departure information before arrival and departure respectively in Gulf of Kutch is provided to VTS information cell through agent or by directly sending mail to vtsmanagergulfofkutch@yahoo.com and vtsgok@yahoo.com
11	The GAPL shall provide financial support in implementation of National Green Corps scheme (being implemented in Gujarat by the GEER Foundation) in Kachchh district in consultation with Forests & Environment Department.	Complied Necessary support will be provided on hearing from GEER foundation to support NGC scheme.
12	The GAPL shall bear the cost of the external agency that may be appointed by the Forests and Environment Department, GoG for supervision/monitoring of their activities during construction and/or operational phases.	Point noted. APSEZ will provide full support for supervision and monitoring of the project operations after due discussion with the concerned agency and Forests & Environment Department, GoG. No such agency was appointed during the compliance period.
13	The dredged material that may be generated, if any, shall be disposed of at location suitably identified in consultation with the institute of repute like NEERI/NIO after due consideration of various environmental aspects and ensuring no significant negative impacts due to the same.	Complied. Construction activities are completed & project is in operation stage. SPM is approximately 8.6 km inside the open sea from the shore where 30 m of draft is naturally available. Hence no dredging is required.
14	No waste including the construction debris, oily waste from construction	Complied. Construction activities are completed and the project is in

Status of the conditions stipulated under CRZ Recommendation

Sr. No.	Conditions	Compliance Status as on 30-09-2019
	equipment's, untreated sewage, etc. would be disposed of in to sea/ river/ creek or in the CRZ areas. The treated sewage meeting with the norms fixed by the Gujarat Pollution Control Board and the reject water from RO plant if any, shall be disposed of at a point in the deep sea as may be suggested by the institute of repute like the NEERI/NIO.	operation phase. There is no disposal of any waste including civil debris in CRZ area. No Sewage or RO Reject water is being generated by SPM activity.
15	The Gujarat Maritime Board shall ensure that the Vessel Traffic Management System for safe navigation in the Gulf of Kachchh shall be established and commissioned before commissioning of the SPM No. 1 by the GAPL. The GAPL shall follow up for this with various stakeholders and provide financial and technical inputs for the same.	Complied. Kandla, GMB & DGLL are the agencies who financially support to VTMS. For SPM, APSEZ is mutual partner to support in case of Oil spill & vice versa. For further details regarding traffic management, please refer condition no. 10 of CRZ recommendations above.
16	A mutual aid system for the Mundra Port region shall be developed to meet with any unforeseen circumstances or to meet with any accidental condition. The GAPL shall take a lead for this by involving other stakeholders including HPCL.	Complied. APSEZ has signed an MoU with HPCL, Mittal Pipeline Ltd., Mundra in the region of Gulf of Kutch to assist each other within stipulated time frame with best combination of resources. Interface with ROSDCP and NOSDCP For responding to oil spill, the Indian Coast Guard has developed the National Oil Spill Disaster Contingency Plan NOSDCP which has the approval of the Committee of Secretaries and has been in operation since 1996. The NOSDCP brings together the combined resources of the various organizations and departments, Coast Guard, Ports and Oil handling Agencies, and related industries, to provide a level of preparedness to the threat posed to the

	Adani Ports and SEZ Limited	From : Apr'19 To : Sep'19
Status of the conditions stipulated under CRZ Recommendation		

Sr. No.	Conditions	Compliance Status as on 30-09-2019
		marine environment by oil spills.
17	A detailed Risk Assessment and Disaster Management Plan shall be worked out before commissioning of the SPM by the GAPL and the mitigative measures shall be identified and implemented. The local Oil Spill Contingency Plan in lines with the National Oil Spill Disaster Contingency Plan for the Mundra Port shall be put in to operation immediately.	<p>Complied.</p> <p>Detailed Risk Assessment and Disaster Management Plan were prepaid By Tata AIG risk assessment services and few mitigation measures are addressed in compliance of specific condition no 10 of EC & CRZ clearance above. These studies were carried out before the start of the development activity and were considered by MoEF&CC before grant of the EC and CRZ clearance.</p> <p>For responding to oil spill, the Indian Coast Guard has developed the National Oil Spill Disaster Contingency Plan NOSDCP which has the approval of the Committee of Secretaries and has been in operation since 1996. Oil Spill Contingency Response Plan (OSCRP) is prepared in accordance with the NOSDCP.</p> <p>OSCRP is updated regularly. The updated OSCRCP was submitted during last half yearly EC Compliance report for the period Oct'18 to Mar'19. And there is no further change.</p>
18	Proper rehabilitation scheme shall be worked out for local fisherman communities in consultation with the District Collector/the Commissioner of Fisheries, Government of Gujarat, before commissioning of the SPM and report shall be furnished to the Forests and Environment Department.	<p>Not applicable</p> <p>Location of SPM is unmanned (approximately 8.64 km inside the open sea from the shore) hence, there is no displacement of people, houses or fishing activity as a result of the project. However, APSEZ performs large scale socio-economic upliftment program and shares the details with FOKIA (Federation of Kutch Industries Association) chaired by District Collector quarterly.</p> <p>For further information related to CSR activities carried out by Adani Foundation in the Mundra region, please refer to compliance of General condition no. 2 of the EC and CRZ clearance above.</p>
19	The construction labour shall be provided with adequate amenities/facilities including the water supply, sanitation and fuel to ensure that the existing environmental condition is not deteriorated by them. The	<p>Complied.</p> <p>Construction activity is already completed, project is in operation phase.</p> <p>No construction camps were located in CRZ area. Most workers came from nearby villages however, for others; construction camps were located outside CRZ area.</p> <p>All necessary infrastructure and facilities like mobile</p>

	Adani Ports and SEZ Limited	From : Apr'19 To : Sep'19
Status of the conditions stipulated under CRZ Recommendation		

Sr. No.	Conditions	Compliance Status as on 30-09-2019
	camps for the construction labour shall be kept outside the CRZ area. The GAPL shall ensure that there is no confrontation amongst the local villagers and construction labour.	toilets, safe drinking water, medical health care etc. were provided.
20	All possible social and health impacts due to the proposed development at Mundra Port shall be assessed in detail in the comprehensive EIA and a detailed management plan shall be developed to mitigate the same.	Complied. Aspects of social and health impact were studied as part of EIA report prepared by NIO and mitigation measures have been implemented. APSEZ performs large scale socio-economic upliftment program and shares the details with FOKIA (Federation of Kutch Industries Association) chaired by District Collector quarterly.
21	The GAPL shall work out a detailed socio-economic upliftment programme in consultation with the District Collector and District Development Officer and shall implement the same. Separate budgetary provisions shall be kept for this purpose.	For further information related to CSR activities carried out by Adani Foundation in the Mundra region, please refer to compliance of General condition no. 2 of the EC and CRZ clearance above.
22	An Environmental Management Cell with person having proper background shall be constituted. A separate budgetary provision shall have to be made for implementation of the Environmental Management Plan.	Complied. APSEZL has a well structured Environment Cell, staffed with qualified manpower for implementation of the Environmental Management Plan. For further details on the same, please refer to compliance of general condition no. 4 of the EC and CRZ clearance above. Separate budget for the Environment Protection measures is earmarked every year. For further details on the same, please refer to compliance of general condition no. 5 of the EC and CRZ clearance above.
23	Post project environmental monitoring shall be carried out regularly through a reputed institute like NEERI/NIO and report shall be submitted to the Forests	Being complied. Monitoring of various environmental parameters for Ambient Air, Noise, marine water and sediments is being carried out by NABL accredited and MoEF&CC approved agency namely M/s. Pollucon Laboratory Pvt. Ltd.

Status of the conditions stipulated under CRZ Recommendation

Sr. No.	Conditions	Compliance Status as on 30-09-2019																																								
	and Environment Department, GoG every year.	<p>Ambient Air Quality (twice in a week) and Noise (once in a month) monitoring are being carried out by NABL and MoEF&CC accredited agency namely M/s. Pollucon Laboratories Pvt. Ltd. Summary of the same for duration from Apr'19 to Sep'19 is mentioned below.</p> <p>Total Ambient Air & Noise Sampling Locations: 4 Nos.</p> <table><tr><th>Parameter</th><th>Unit</th><th>Max</th><th>Min</th><th>Perm. Limit^{\$}</th></tr><tr><td>PM₁₀</td><td>µg/m³</td><td>98.3</td><td>44.03</td><td>100</td></tr><tr><td>PM_{2.5}</td><td>µg/m³</td><td>56.36</td><td>16.54</td><td>60</td></tr><tr><td>SO₂</td><td>µg/m³</td><td>26.5</td><td>5.69</td><td>80</td></tr><tr><td>NO₂</td><td>µg/m³</td><td>45.36</td><td>14.59</td><td>80</td></tr><tr><th>Noise</th><th>Unit</th><th>Max</th><th>Min</th><th>Perm. Limit</th></tr><tr><td>Day Time</td><td>dB(A)</td><td>74.2</td><td>47.7</td><td>75</td></tr><tr><td>Night Time</td><td>dB(A)</td><td>69.8</td><td>46.6</td><td>70</td></tr></table> <p>^{\$} as per NAAQ standards, 2009 Values recorded confirms to the stipulated standards</p> <p>Marine water monitoring is carried out on monthly frequency In order to analyzed marine water quality, marine sampling is being carried out at a location nearby SPM. Please refer specific condition No. 8 of EC & CRZ clearance above.</p> <p>Environmental monitoring reports for the period from Apr'19 to Sep'19 are enclosed as Annexure – 2.</p>	Parameter	Unit	Max	Min	Perm. Limit ^{\$}	PM ₁₀	µg/m ³	98.3	44.03	100	PM _{2.5}	µg/m ³	56.36	16.54	60	SO ₂	µg/m ³	26.5	5.69	80	NO ₂	µg/m ³	45.36	14.59	80	Noise	Unit	Max	Min	Perm. Limit	Day Time	dB(A)	74.2	47.7	75	Night Time	dB(A)	69.8	46.6	70
Parameter	Unit	Max	Min	Perm. Limit ^{\$}																																						
PM ₁₀	µg/m ³	98.3	44.03	100																																						
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Noise	Unit	Max	Min	Perm. Limit																																						
Day Time	dB(A)	74.2	47.7	75																																						
Night Time	dB(A)	69.8	46.6	70																																						
24	No construction activities shall be carried out by the GAPL in any of the Forest areas.	<p>Already Complied. Not applicable at present.</p> <p>The construction work is completed and project is in operation phase. No construction activity at any of the forest area is carried out for project of SPM, COT and connecting pipeline.</p>																																								
25	All necessary clearances from different Government Department/Agencies shall be obtained before commissioning any construction activities.	<p>Complied.</p> <p>All necessary clearances as per prevailing laws have been already obtained. Construction activity is already completed, project is in operation phase.</p>																																								
26	A half yearly compliance report with respect to above mentioned conditions as well as the implementation of the	<p>Complied.</p> <p>Half yearly compliance report is being submitted regularly. Last compliance report including results of monitoring data for the period of Oct'18 to Mar'19 was submitted to</p>																																								

Status of the conditions stipulated under CRZ Recommendation

Sr. No.	Conditions	Compliance Status as on 30-09-2019																					
	suggestions/ recommendations of the EIA and Risk Assessment reports shall be furnished to the Forest and Environment Department, GoG, without fail at regular interval.	<p>Regional Office of MoEF&CC @ Bhopal, Zonal Office of CPCB @ Baroda, GPCB @ Gandhinagar & Gandhidham and Dept. of Forests & Env., Gandhinagar vide our letter dated 20.05.2019. Copy of the same is also available on our web site https://www.adaniports.com/ports-downloads. A soft copy of the same was also submitted through e-mail on 27.05.2019 to all the concern authorities. Please refer below for the details regarding past six compliance submissions.</p> <table border="1"> <thead> <tr> <th>Sr. no.</th><th>Compliance period</th><th>Date of submission</th></tr> </thead> <tbody> <tr> <td>1</td><td>Apr'16 to Sep'16</td><td>01.12.2016</td></tr> <tr> <td>2</td><td>Oct'16 to Mar'17</td><td>30.05.2017</td></tr> <tr> <td>3</td><td>Apr'17 to Sep'17</td><td>01.12.2017</td></tr> <tr> <td>4</td><td>Oct'17 to Mar'18</td><td>29.05.2018</td></tr> <tr> <td>5</td><td>Apr'18 to Sep'18</td><td>30.11.2018</td></tr> <tr> <td>6</td><td>Oct'18 to Apr'19</td><td>31.05.2019</td></tr> </tbody> </table> <p>All the recommendations given in the report of Tata AIG Risk Management Services are implemented. For further information related to the same, please refer to compliance of specific condition no. 10 of the EC and CRZ clearance above.</p>	Sr. no.	Compliance period	Date of submission	1	Apr'16 to Sep'16	01.12.2016	2	Oct'16 to Mar'17	30.05.2017	3	Apr'17 to Sep'17	01.12.2017	4	Oct'17 to Mar'18	29.05.2018	5	Apr'18 to Sep'18	30.11.2018	6	Oct'18 to Apr'19	31.05.2019
Sr. no.	Compliance period	Date of submission																					
1	Apr'16 to Sep'16	01.12.2016																					
2	Oct'16 to Mar'17	30.05.2017																					
3	Apr'17 to Sep'17	01.12.2017																					
4	Oct'17 to Mar'18	29.05.2018																					
5	Apr'18 to Sep'18	30.11.2018																					
6	Oct'18 to Apr'19	31.05.2019																					
27	The GAPL shall also have to comply with any other condition as may be stipulated by the Forests and Environment Department, GoG, from time to time.	Point noted.																					

Annexure – 1

Details of Greenbelt development at APSEZ, Mundra

LOCATION	Total Green Zone Detail Till Up to Sept - 2019				
	Area (In Ha.)	Trees (Nos.)	Palm (Nos.)	Shrubs (SQM)	Lawn (SQM)
SV COLONY	69.53	32480.00	7298.00	68327.00	95019.00
PORT & NON SEZ	81.37	146692.00	19220.00	75061.78	61937.38
SEZ	116.60	227120.00	20489.00	220583.60	28162.03
MITAP	2.48	8168.00	33.00	3340.00	4036.00
WEST PORT	94.33	206587.00	63331.00	24112.00	22854.15
AGRI PARK	8.94	17244.00	1332.00	5400.00	2121.44
SOUTH PORT	14.45	27530.00	3470.00	3882.00	3327.26
Samudra Township	55.93	53672.00	11834.00	20908.89	47520.07
Productive Farming (Vadala Farm)	23.79	27976.00	0.00	0.00	0.00
TOTAL (APSEZL)	467.40	747469.00	127007.00	421615.27	264977.33
		874476.00			

Details of Mangrove Afforestation done by APSEZ

Sl. no.	Location	Area (ha)	Duration	Species	Implementation agency
1	Mundra Port	24.0	-	Avicennia marina	Dr. Maity, Mangrove consultant of India
2	Mundra Port	25.0	-	Avicennia marina	Dr. Maity, Mangrove consultant of India
3	Luni/Hamirmora (Mundra, Kutch)	160.8	2007 - 2015	Avicennia marina, Rhizophora mucronata, Ceriops tagal	GUIDE, Bhuj
4	Kukadsar (Mundra, Kutch)	66.5	2012 - 2014	Avicennia marina	GUIDE, Bhuj
5	Forest Area (Mundra)	298.0	2011 - 2013	Avicennia marina	-
6	Jangi Village (Bhachau, Kutch)	50.0	2012 - 2014	Avicennia marina	GUIDE, Bhuj
7	Jakhau Village (Abdasa, Kutch)	310.6	2007-08 & 2011-13	Avicennia marina, Rhizophora mucronata, Ceriops tagal	GUIDE, Bhuj
8	Sat Saida Bet (Kutch)	255.0	2014-15 & 2016-17	Avicennia marina & Bio diversity	GUIDE, Bhuj
9	Dandi Village (Navsari)	800.0	2006 - 2011	Avicennia marina, Rhizophora mucronata, Ceriops tagal	SAVE, Ahmedabad
10	Talaza Village (Bhavnagar)	50.0	2011-12	Avicennia marina	SAVE, Ahmedabad
11	Narmada Village (Bhavnagar)	250.0	2014 - 2015	Avicennia marina	SAVE, Ahmedabad
12	Malpur Village (Bharuch)	200.0	2012-14	Avicennia marina	SAVE, Ahmedabad
13	Kantiyajal Village (Bharuch)	50.0	2014-15	Avicennia marina	SAVE, Ahmedabad
14	Devla Village (Bharuch)	150.0	210-16	Avicennia marina	SAVE, Ahmedabad
15	Village Tala Talav (Khambhat, Anand)	100.0	2015 - 2016	Avicennia marina	SAVE, Ahmedabad
16	Village Tala Talav (Khambhat, Anand)	38.0	2015 - 2016	Avicennia marina	GEC, Gandhinagar
17	Aliya Bet, Village Katpor (Hansot, Bharuch)	62.0	2017-18	Avicennia marina & Rhizophora spp.	GEC, Gandhinagar
Total Mangrove Plantation:		2889.90 Ha			

Annexure – 2



POLLUCON

LABORATORIES PVT. LTD.

Environmental Auditors, Consultants & Analysts.
Cleaner Production / Waste Minimization Facilitator

Recognised by MoEF, New Delhi Under Sec. 12 of Environmental (Protection) Act-1986

"HALF YEARLY ENVIRONMENTAL MONITORING REPORT"

FOR



**ADANI PORTS AND SPECIAL ECONOMIC ZONE LIMITED
TAL: MUNDRA, KUTCH, MUNDRA – 370 421**

MONITORING PERIOD:

PREPARED BY:



POLLUCON LABORATORIES PVT.LTD.

**PLOT NO.5/6 "POLLUCON HOUSE", OPP. BALAJI INDUSTRIAL SOCIETY,
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TC - 5945

ISO 9001:2015

ISO 14001:2015

OHSAS 18001:2007

MARINE WATER MONITORING SUMMARY REPORT

RESULTS OF MARINE WATER [M1 LEFT SIDE OF BOCHA CREEK - N 22°45'183" E 069°43'241"]

SR. NO.	TEST PARAMETERS	UNIT	APRIL 2019		MAY 2019		JUNE 2019		JULY 2019		AUGUST 2019		SEPTEMBER 2019		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	8.16	8.12	8.07	8.13	8.12	8.07	8.18	8.14	8.03	8.11	8.13	8.1	IS3025(P11)83Re.02
2	Temperature	oC	30.9	30.5	31.8	31.6	30.0	29.9	30.4	30	29.8	29.1	29.7	29.3	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	224	246	194	213	328	302	336	350	369	374	304	318	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	4	BDL*	4.3	BDL*	4.2	BDL*	2.9	BDL*	BDL*	BDL*	3.5	BDL*	IS 3025 (P44)1993Re.03Editi on2.1
5	Dissolved Oxygen	mg/L	6.2	5.5	5.6	5.4	6.2	5.3	6	5.5	6.1	5.8	5.8	5.9	IS3025(P38)89Re.99
6	Salinity	ppt	36.2	36.5	37	37.5	36.4	36.9	36.8	37.5	34.8	35.2	34.5	34.6	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)5520 D
8	Nitrate as NO ₃	μmol/L	4.53	3.27	3.14	2.9	3.56	3.1	2.56	2.3	2.16	1.94	2	2.13	IS3025(P34)88
9	Nitrite as NO ₂	μmol/L	0.7	0.62	0.54	0.45	0.87	0.64	0.45	0.32	0.32	0.26	0.25	0.28	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	μmol/L	1.54	1.46	1.60	1.52	1.98	1.60	1.7	1.4	1.56	1.27	1.76	1.89	IS3025(P34)88Cla.2.3
11	Phosphates as PO ₄	μmol/L	1.56	1.39	1.24	1.1	2.1	2.04	1.83	1.63	1.71	1.42	1.34	1.4	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	μmol/L	6.78	5.35	5.28	4.87	6.41	5.34	4.71	4.02	4.04	3.47	4.01	4.3	IS3025(P34)88
13	Petroleum Hydrocarbon	μg/L	9.3	6.4	5.9	3.6	5.1	3	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	37780	37993.0	38452	38894	37941	38310	37216	37312	35940	36213	35040	36102	IS3025(P16)84Re.02
15	COD	mg/L	15.7	7.3	11.9	6.4	15.2	7.5	9.4	BDL*	8.6	BDL*	13	BDL*	APHA(22 nd Edi) 5520-D Open Reflux
A	Flora and Fauna														
16	Primary productivity	mgC/L /day	5.73	4.72	5.62	4.61	9.67	5.4	9.9	6.3	8.32	7.42	7.65	6.61	APHA (22 nd Edi) 10200-J
B	Phytoplankton														
17.1	Chlorophyll	mg/m ³	1.97	1.49	2.88	2	2.83	2.29	2.93	2.61	2.83	2.56	1.97	1.49	APHA (22 nd Edi) 10200-H



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Lab Manager




Dr. Arun Bajpai

Lab Manager (Q)

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17.2	Phaeophytin	mg/m ³	2.7	3.0	1.2	2.0	2.0	1.9	2.11	1.83	0.95	1.29	2.7	3.0	APHA (22 nd Edi) 10200-H
17.3	Cell Count	No. x 10 ³ /L	172	58	156	70	172	56	148	50	134	42	172	58	APHA (22 nd Edi) 10200-H
17.4	Name of Group Number and name of group species of each group	--	<i>Cyclotella sp.</i> <i>Biddulphia sp.</i> <i>Coscinodiscus sp.</i> <i>Thallasiosira sp.</i>	<i>Melosira sp.</i> <i>Rhizosolenia sp.</i> <i>Navicula sp.</i> --	<i>Navicula sp.</i> <i>Melosira sp.</i> <i>Thallasiosira sp.</i> <i>Cyclotella sp.</i> --	<i>Nitzschia sp.</i> <i>Thalassionema sp.</i> <i>Navicula sp.</i> --	<i>Thallasiosira sp.</i> <i>Rhizosolenia sp.</i> <i>Coscinodiscus sp.</i> <i>Nitzschia sp.</i> --	<i>Nitzschia sp.</i> <i>Coscinodiscus sp.</i> <i>Navicula sp.</i> --	<i>Nitzschia sp.</i> <i>Rhizosolenia sp.</i> <i>Coscinodiscus sp.</i> <i>Skeletonema sp.</i> --	<i>Navicula sp.</i> <i>Rhizosolenia sp.</i> <i>Fragillaria sp.</i> --	<i>Coscinodiscus sp.</i> <i>Thallasiosira sp.</i> <i>Rhizosolenia sp.</i> <i>Pediastrum sp.</i>	<i>Ceratium sp.</i> <i>Fragillaria sp.</i> <i>Synedra sp.</i> --	<i>Navicula sp.</i> <i>Rhizosolenia sp.</i> <i>Coscinodiscus sp.</i> <i>Amphiproteron sp.</i>	<i>Ceratium sp.</i> <i>Cyclotella sp.</i> <i>Biddulphia sp.</i> --	APHA (22 nd Edi) 10200-H
C Zooplanktons															
18.1	Abundance (Population)	noX10 ³ /100 m ³	32			36		40		46		42		51	APHA (22 nd Edi) 10200-G
18.2	Name of Group Number and name of group species of each group	--	Foraminiferans Chaetognathes Polychaetes			Polychaetes Crustaceans Decapods		Polychaetes Gastropods --		Gastropods Ostracods Polychaetes		Amphipods Decapods Polychaetes		Copepods Mysids Gastropods	APHA (22 nd Edi) 10200-G
18.3	Total Biomass	ml/100 m ³	2.8			2.9		2.6		2.7		2.1		3.2	APHA (22 nd Edi) 10200-G
D Microbiological Parameters															
19.1	Total Bacterial Count	CFU/ml	1750			1800		1840		1900		1850		1780	IS 5402:2002
19.2	Total Coliform	/ml	Absent			Absent		Absent		Absent		Absent		Absent	APHA(22 nd Edi)9221-D
19.3	Ecoli	/ml	Absent			Absent		Absent		Absent		Absent		Absent	IS:1622:1981Edi.2.4 (2003-05)
19.4	Enterococcus	/ml	Absent			Absent		Absent		Absent		Absent		Absent	IS : 15186 :2002
19.5	Salmonella	/ml	Absent			Absent		Absent		Absent		Absent		Absent	IS : 5887 (P-3)
19.6	Shigella	/ml	Absent			Absent		Absent		Absent		Absent		Absent	IS : 1887 (P-7)
19.7	Vibrio	/ml	Absent			Absent		Absent		Absent		Absent		Absent	IS : 5887 (P-5)



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RESULTS OF SEDIMENT ANALYSIS [M1 LEFT SIDE OF BOCHA CREEK - N 22°45'183" E 069°43'241"]

SR. NO.	TEST PARAMETERS	UNIT	APRIL 2019	MAY 2019	JUNE 2019	JULY 2019	AUGUST 2019	SEPTEMBER 2019	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.52	0.7	0.63	0.57	0.5	0.62	FCO:2007
2	Phosphorus as P	µg/g	234	284	343	490	436	412	APHA(22 nd Edi) 4500 C
3	Texture	--	Sandy	Sandy	Sandy	Sandy	Sandy	Sandy	--
4	Petroleum Hydrocarbon	µg/g	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	Heavy Metals								
5.1	Aluminum as Al	%	5.15	5.2	5.1	4.8	5.1	5.32	AAS APHA 3111 B
5.2	Total Chromium as Cr ⁺³	µg/g	192	170	124	102	170	210	AAS 3111B
5.3	Manganese as Mn	µg/g	1320	1390	1168	1048	1031	1068	AAS APHA 3111 B
5.4	Iron as Fe	%	4.95	4.9	4.9	4.64	4.8	5.1	AAS APHA(22 nd Edi)3111 B
5.5	Nickel as Ni	µg/g	22.6	19.6	34	18.2	20.3	27	AAS APHA(22 nd Edi)3111 B
5.6	Copper as Cu	µg/g	28.4	20.4	19.8	15.9	25.1	29	AAS APHA(22 nd Edi)3111 B
5.7	Zinc as Zn	µg/g	216	312	224	183	203	231	AAS APHA(22 nd Edi)3111 B
5.8	Lead as Pb	µg/g	1.83	1.27	3.6	2.8	1.74	1.64	AAS APHA(22 nd Edi)3111 B
5.9	Mercury as Hg	µg/g	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Polychaetes Decapods --	Crustaceans Polychaetes --	Crustaceans Polychaetes --	Polychaetes Gastropods --	Polychaetes Bivalves Crustaceans	Polychaetes Crustacean Brachyurans	APHA (22 nd Edi) 10500-C
6.2	MeioBenthos	--	Foraminiferans Gastropods --	Gastropods Bryozoans --	Nematodes Foraminiferans --	Foraminiferans -- --	Nematodes --	Nematods --	APHA (22 nd Edi) 10500-C
6.3	Population	no/m2	618	733	704	765	617	735	APHA (22 nd Edi) 10500-C



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Lab Manager




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RESULTS OF MARINE WATER [M2 MOUTH OF BOCHA & NAVINAL CREEK - N 22°44'239" E 069°43'757"]

SR. NO.	TEST PARAMETERS	UNIT	APRIL 2019		MAY 2019		JUNE 2019		JULY 2019		AUGUST 2019		SEPTEMBER 2019		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	8.19	8.16	8.10	8.15	8.19	8.14	8.20	8.15	8.02	7.97	8.16	8.13	IS3025(P11)83 Re.02
2	Temperature	oC	30.8	30.5	31.7	31.5	30.4	30.0	30.3	30.1	29.7	29.3	29.8	29.5	IS3025(P9)84R e.02
3	Total Suspended Solids	mg/L	193	210	218	236	315	368	329	350	356	382	394	410	IS3025(P17)84 Re.02
4	BOD (3 Days @ 27 °C)	mg/L	5.1	BDL*	4.6	BDL*	3.4	BDL*	3.0	BDL*	BDL*	BDL*	3.4	BDL*	IS 3025 (P44)1993Re.03 Edition2.1
5	Dissolved Oxygen	mg/L	5.9	5.6	6.0	5.9	5.9	5.6	5.9	5.7	6.1	5.9	5.9	5.8	IS3025(P38)89 Re.99
6	Salinity	ppt	36.3	36.5	37.1	37.4	36.4	36.8	36.1	36.5	34.7	35	34.6	35.1	APHA (22 nd Eti) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Eti)5 520D
8	Nitrate as NO ₃	μmol/L	5.61	5.04	3.0	2.84	3.3	3	2.5	2.76	2.11	1.92	2.5	2.42	IS3025(P34)88
9	Nitrite as NO ₂	μmol/L	0.71	0.63	0.55	0.51	0.6	0.51	0.38	0.47	0.26	0.18	1.7	1.83	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	μmol/L	1.60	1.43	1.70	1.66	1.87	1.62	1.27	1.41	0.9	0.8	2.2	2.2	IS3025(P34)88 Cla.2.3
11	Phosphates as PO ₄	μmol/L	1.47	1.2	1.3	1.14	2.28	2	1.83	1.99	1.57	1.28	1.7	1.83	APHA(22 nd Eti) 4500 C
12	Total Nitrogen	μmol/L	7.93	7.10	5.25	5.01	5.73	5.13	4.15	4.64	3.29	2.86	5.07	5.22	IS3025(P34)88
13	Petroleum Hydrocarbon	μg/L	11.2	BDL*	6.8	3.2	7.7	4.9	10.4	BDL*	BDL*	BDL*	13.6	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	37824	37989	38550	38894	37143	37790	37118	37284	36812	37126	35524	35376	IS3025(P16)84 Re.02
15	COD	mg/L	14.2	6.3	17.8	7.4	10.4	7.0	14.6	6.3	9.6	BDL*	15.2	BDL*	APHA(22 nd Eti) 5520-D Open Reflux
A Flora and Fauna															
16	Primary productivity	mgC/ L/day	5.85	4.05	7.76	5.28	9.22	6.3	9	6.52	7.87	6.3	7.42	6	APHA (22 nd Eti) 10200-J
B Phytoplankton															
17.1	Chlorophyll	mg/ m ³	3.2	2.67	2.83	2.56	2.94	2.34	2.77	2.24	2.45	2.13	2.72	1.65	APHA (22 nd Eti) 10200-H
17.2	Phaeophytin	mg/ m ³	1.1	1.1	1.7	1.3	1.5	1.6	1.8	1.87	1.4	1.64	1.3	1.22	APHA (22 nd Eti) 10200-H
17.3	Cell Count	No. x 10 ³ /L	159	50	141	56	173	60	146	50	123	37	114	41	APHA (22 nd Eti) 10200-H



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Lab Manager




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Lab Manager (Q)

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17.4	Name of Group Number and name of group species of each group	--	Thallasiosira sp. Fragillaria sp. Biddulphia sp. Rhizosolenia sp.	Nitzschia sp. Pleurosigma sp. Ceratum	Navicula sp. Biddulphia sp. Thallasioema sp. Melosira sp.	Nitzschia sp. Coscinodiscus sp. Synedra sp. Biddulphia sp.	Nitzschia sp. Coscinodiscus sp. Synedra sp. Biddulphia sp.	Navicula sp. Rhizosolenia sp. Nitzschia sp.	Navicula sp. Synedra sp. Pleurosigma sp. Melosira sp.	Nitzschia sp. Fragillaria sp. Biddulphia sp.	Ceratium Thallasioema sp. Nitzschia sp. Melosira sp.	Melosira sp. Fragillaria sp. Navicula sp.	Ceratium sp. Skeletonema sp. Navicula sp. Rhizosolenia sp.	Melosira sp. Nitzschia sp. Pleurosigma sp.	APHA (22 nd Edi) 10200-H
C Zooplanktons															
18.1	Abundance (Population)	noX10 ³ / 100 m ³	48		42		55		39		32		39		APHA (22 nd Edi) 10200-G
18.2	Name of Group Number and name of group species of each group	--	Chaetognathes Polychaetes Gastropods		Polychaetes Crustaceans	--	Polychaetes Bivalves Crustaceans		Ostracods Nematodes Chaetognathes		Polychaetes Ostracods Bivalves		Foraminiferans Ostracods Decapods		APHA (22 nd Edi) 10200-G
18.3	Total Biomass	ml/100 m ³	2.71		1.63		1.8		1.5		1.25		1.95		APHA (22 nd Edi) 10200-G
D Microbiological Parameters															
19.1	Total Bacterial Count	CFU/ml	1550		1620		1660		1700		1760		1850		IS 5402:2002
19.2	Total Coliform	/ml	Absent		Absent		Absent		Absent		Absent		Absent		APHA(22 nd Edi)9 221-D
19.3	Ecoli	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:1622:1981Ed i.2.4(2003-05)
19.4	Enterococcus	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 15186 :2002
19.5	Salmonella	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 5887 (P-3)
19.6	Shigella	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 1887 (P-7)
19.7	Vibrio	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 5887 (P-5)



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RESULTS OF SEDIMENT ANALYSIS [M2 MOUTH OF BOCHA & NAVINAL CREEK – N 22°44'239" E 069°43'757"]

SR. NO.	TEST PARAMETERS	UNIT	APRIL 2019	MAY 2019	JUNE 2019	JULY 2019	AUGUST 2019	SEPTEMBER 2019	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.65	--	--	0.44	0.48	0.5	FCO:2007
2	Phosphorus as P	µg/g	231	--	--	384	403	412	APHA(22 nd Eti) 4500 C
3	Texture	--	Sandy	--	--	Sandy	Sandy	Sandy	--
4	Petroleum Hydrocarbon	µg/g	BDL*	--	--	BDL*	BDL*	BDL*	PLPL-TPH
5	Heavy Metals								
5.1	Aluminum as Al	%	4.96	--	--	4.84	4.7	4.93	AAS APHA 3111 B
5.2	Total Chromium as Cr+3	µg/g	236	--	--	102	168	208	AAS 3111B
5.3	Manganese as Mn	µg/g	1245	--	--	978	993	1014	AAS APHA 3111 B
5.4	Iron as Fe	%	5.2	--	--	4.96	4.83	5.16	AAS APHA(22 nd Eti)3111 B
5.5	Nickel as Ni	µg/g	22.6	--	--	44	30	26	AAS APHA(22 nd Eti)3111 B
5.6	Copper as Cu	µg/g	40.2	--	--	25	22.8	30.2	AAS APHA(22 nd Eti)3111 B
5.7	Zinc as Zn	µg/g	193	--	--	177	169	198	AAS APHA(22 nd Eti)3111 B
5.8	Lead as Pb	µg/g	1.83	--	--	1.5	1.24	1.35	AAS APHA(22 nd Eti)3111 B
5.9	Mercury as Hg	µg/g	BDL*	--	--	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Polychaetes Crustaceans --	--	--	Amphipods Isopods --	amphipods Polychaetes --	Polychaetes Gastropods --	APHA (22 nd Edi) 10500-C
6.2	MeioBenthos	--	Foraminiferans --	--	--	Copepods Brozoans --	Forminiterans --	Nematods Ostracodes --	APHA (22 nd Edi) 10500-C
6.3	Population	no/m ²	557	--	--	170	440	471	APHA (22 nd Edi) 10500-C



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RESULTS OF MARINE WATER [M3 EAST OF BOCHAISLAND - N 22°46'530" E 069°41'690"]

SR. NO.	TEST PARAMETERS	UNIT	APRIL 2019		MAY 2019		JUNE 2019		JULY 2019		AUGUST 2019		SEPTEMBER 2019		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	8.14	8.10	8.13	8.09	8.17	8.11	8.24	8.16	8.05	7.99	8.11	8.09	IS3025(P11)83Re.02
2	Temperature	oC	30.4	30.1	31.8	31.9	30.1	30.0	30.9	30.3	29.9	29.3	29.8	29.5	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	198	223	240	278	310	291	330	304	368	390	302	315	IS3025(P17)84Re.02
4	BOD (3 Days @ 27°C)	mg/L	4.9	BDL*	4.0	BDL*	5.2	BDL*	3.2	BDL*	BDL*	BDL*	4.2	BDL*	IS 3025 (P44)1993Re.03Edition2.1
5	Dissolved Oxygen	mg/L	6.0	5.8	5.9	5.7	6.0	5.8	6	5.7	6.1	5.9	5.8	6.0	IS3025(P38)89Re.99
6	Salinity	ppt	36.4	36.6	37.2	37.5	36	36.5	36.3	36.4	34.8	35.2	34.3	34.8	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)552 OD
8	Nitrate as NO ₃	μmol/L	5.29	4.03	3.26	2.9	2.98	2.68	2.64	2.4	2.2	2.0	2.3	2.5	IS3025(P34)88
9	Nitrite as NO ₂	μmol/L	0.75	0.62	0.54	0.46	0.24	0.2	0.21	0.18	0.33	0.21	0.25	0.29	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	μmol/L	1.48	1.29	1.60	1.54	1.83	1.66	1.46	1.1	1.6	1.3	1.6	1.7	IS3025(P34)88Cla.2.3
11	Phosphates as PO ₄	μmol/L	1.81	1.58	1.26	1.18	1.58	1.32	1.29	1.12	1.83	1.46	1.39	1.52	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	μmol/L	7.52	5.9	5.40	4.9	5.05	4.5	4.31	3.68	4.12	3.51	4.16	4.43	IS3025(P34)88
13	Petroleum Hydrocarbon	μg/L	10.4	BDL*	11.6	BDL*	8.3	BDL*	BDL*	BDL*	BDL*	BDL*	10.9	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	37958	38057	38598	37924	37310	37864	36781	36894	36718	38017	35843	35210	IS3025(P16)84Re.02
15	COD	mg/L	13.4	BDL*	15.6	BDL*	19.2	BDL*	13.6	BDL*	10	BDL*	14	BDL*	APHA(22 nd Edi) 5520-D Open Reflux
A Flora and Fauna															
16	Primary productivity	mgC/L/day	7.65	5.28	6.52	5.4	10.35	8.32	8.88	7.31	7.87	6.75	7.31	5.96	APHA (22 nd Edi) 10200-J
B Phytoplankton															
17.1	Chlorophyll	mg/m ³	3.25	2.18	2.83	2.4	3.25	2.72	2.88	2.34	2.93	2.72	2.61	2.13	APHA (22 nd Edi) 10200-H
17.2	Phaeophytin	mg/m ³	1.4	2.7	1.7	2.4	1.4	1.8	2.05	2.6	2.78	1.8	2.32	2.1	APHA (22 nd Edi) 10200-H



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17.3	Cell Count	No. x 10 ³ /L	162	70	150	60	170	62	148	56	116	50	130	56	APHA (22 nd Edi) 10200-H
17.4	Name of Group Number and name of group species of each group	--	<i>Navicula sp.</i> <i>Thallasiosira sp.</i> <i>Biddulphia sp.</i> <i>cymbella sp.</i>	<i>Fragillaria sp.</i> <i>Nitzschia sp.</i> <i>Melosira sp.</i> --	<i>Thallasioema sp.</i> <i>Biddulphia sp.</i> <i>Cyclotella sp.</i> <i>Melosira sp.</i> --	<i>Rhizosolenia sp.</i> <i>Thallasiosira sp.</i> <i>Nitzschia sp.</i> -- --	<i>Rhizosolenia sp.</i> <i>Thallasiosira sp.</i> <i>Cyclotella sp.</i> <i>Biddulphia sp.</i> <i>Navicula sp.</i>	<i>Navicula sp.</i> <i>Nitzschia sp.</i> <i>Coscinodiscus sp.</i> -- --	<i>Melosira sp.</i> <i>Thallasiosira sp.</i> <i>Rhizosolenia sp.</i> <i>Peridinium</i> --	<i>Nitzschia sp.</i> <i>Navicula sp.</i> <i>Cheatecerous sp.</i> -- --	<i>Melosira sp.</i> <i>Closterium sp.</i> <i>Fragillaria sp.</i> <i>Coscinodiscus sp.</i> --	<i>Navicula sp.</i> <i>Thallasiosira sp.</i> <i>Synedra sp.</i> --	<i>Melosira sp.</i> <i>Biddulphia sp.</i> <i>Coscinodiscus sp.</i> <i>Cheatecerous sp.</i>	<i>Navicula sp.</i> <i>Biddulphia sp.</i> <i>Amphiprora sp.</i> --	APHA (22 nd Edi) 10200-H
C Zooplanktons															
18.1	Abundance (Population)	noX10 ³ /100 m ³	41		51		56		50		39		31		APHA (22 nd Edi) 10200-G
18.2	Name of Group Number and name of group species of each group	--	Foraminiferans Mysids Gastropods		Polychaetes Crustaceans --		Polychaetes Bivalves Crustaceans		Hydrozoa Echinoderms Ostracods		Polychaetes Decapods Ctenophores		Ctenophores Ostracods Gastropods		APHA (22 nd Edi) 10200-G
18.3	Total Biomass	ml/100 m ³	2.05		2.6		3.1		2.9		1.2		1.8		APHA (22 nd Edi) 10200-G
D Microbiological Parameters															
19.1	Total Bacterial Count	CFU/ml	1720		1800		1780		1870		1740		1800		IS 5402:2002
19.2	Total Coliform	/ml	Absent		Absent		Absent		Absent		Absent		Absent		APHA(22 nd Edi)922 1-D
19.3	Ecoli	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:1622:1981Edi.2 .4(2003-05)
19.4	Enterococcus	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 15186 :2002
19.5	Salmonella	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 5887 (P-3)
19.6	Shigella	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 1887 (P-7)
19.7	Vibrio	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 5887 (P-5)



H. T. Shah

Lab Manager




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Lab Manager (Q)

RESULTS OF SEDIMENT ANALYSIS [M3 RIGHT SIDE OF BOCHA CREEK - N 22°46'530" E 069°41'690"]

SR. NO.	TEST PARAMETERS	UNIT	APRIL 2019	MAY 2019	JUNE 2019	JULY 2019	AUGUST 2019	SEPTEMBER 2019	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.6	0.48	0.64	0.57	0.6	0.59	FCO:2007
2	Phosphorus as P	µg/g	201	258	350	430	457	376	APHA(22 nd Eti) 4500 C
3	Texture	--	Sandy	Sandy	Sandy	Sandy	Sandy	Sandy	--
4	Petroleum Hydrocarbon	µg/g	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	Heavy Metals								
5.1	Aluminum as Al	%	4.8	5.15	4.88	4.78	4.58	4.86	AAS APHA 3111 B
5.2	Total Chromium as Cr ⁺³	µg/g	172	206	139	104	157	213	AAS 3111B
5.3	Manganese as Mn	µg/g	1260	1174	1206	1068	1076	1106	AAS APHA 3111 B
5.4	Iron as Fe	%	4.91	5.05	4.75	4.84	4.65	4.98	AAS APHA(22 nd Eti)3111 B
5.5	Nickel as Ni	µg/g	27.3	23.9	27	47.93	25.4	31	AAS APHA(22 nd Eti)3111 B
5.6	Copper as Cu	µg/g	22.4	30.9	20.2	25.52	23.6	26	AAS APHA(22 nd Eti)3111 B
5.7	Zinc as Zn	µg/g	203	256	218	203	249	227	AAS APHA(22 nd Eti)3111 B
5.8	Lead as Pb	µg/g	1.52	1.65	3.2	3.7	1.63	2.14	AAS APHA(22 nd Eti)3111 B
5.9	Mercury as Hg	µg/g	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Polychaete worms Chaetognaths --	Crustaceans Polychaetes --	Polychaetes Gastropods --	Crustaceans Decapods --	Polychaetes Bivalves --	Crustaceans Bivalves --	APHA (22 nd Edi) 10500-C
6.2	MeioBenthos	--	Nematodes Foraminiferans --	Hydrozoans -- --	Nematodes Branchyurans --	Foraminiferans Hydrozoans --	Nematodes Gastropods	Foraminiferans --	APHA (22 nd Edi) 10500-C
6.3	Population	no/m ²	735	618	765	733	674	557	APHA (22 nd Edi) 10500-C



H. T. Shah

Lab Manager




Dr. Arun Bajpai

Lab Manager (Q)

Recognised by MoEF, New Delhi Under Sec. 12 of Environmental (Protection) Act-1986

RESULTS OF MARINE WATER [M4 JUNA BANDAR N 22°47'57" E 069°43'620"]

SR. NO.	TEST PARAMETERS	UNIT	APRIL 2019		MAY 2019		JUNE 2019		JULY 2019		AUGUST 2019		SEPTEMBER 2019		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	8.17	8.13	8.20	8.11	8.16	8.10	8.21	8.17	8.07	8.1	8.13	8.07	IS3025(P11)83R e.02
2	Temperature	oC	30.9	30.7	31.9	31.5	30.2	30.0	30.8	30.1	29.8	30	29.8	29.6	IS3025(P9)84Re .02
3	Total Suspended Solids	mg/L	183	210	236	259	330	354	349	326	394	413	316	334	IS3025(P17)84R e.02
4	BOD (3 Days @ 27 °C)	mg/L	6.2	BDL*	4.4	BDL*	3.5	BDL*	3.8	BDL*	3.0	BDL*	4.0	BDL*	IS 3025 (P44)1993Re.03 Edition2.1
5	Dissolved Oxygen	mg/L	5.9	5.7	6.4	6.0	6.1	5.8	6	5.7	5.9	5.6	5.9	6.0	IS3025(P38)89R e.99
6	Salinity	ppt	36.4	36.7	37.2	37.5	36.3	36.4	35.9	36.9	34.7	35.2	34.2	34.5	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)5 520D
8	Nitrate as NO ₃	µmol/L	4.63	3.57	6.1	5.85	3.85	3.64	3.14	2.96	2.26	1.98	2.13	2.28	IS3025(P34)88
9	Nitrite as NO ₂	µmol/L	0.9	0.75	0.6	0.8	0.74	0.61	0.52	0.36	0.42	0.29	0.3	0.34	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	µmol/L	1.86	1.79	2.80	3.40	1.94	1.80	1.7	1.47	1.5	1.3	1.5	1.6	IS3025(P34)88C la.2.3
11	Phosphates as PO ₄	µmol/L	1.56	1.26	1.82	1.44	2	1.91	1.83	1.52	1.36	1.18	1.64	1.76	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	µmol/L	7.39	6.12	9.50	10.10	6.53	6.05	5.36	4.79	4.17	3.58	3.95	4.21	IS3025(P34)88
13	Petroleum Hydrocarbon	µg/L	15	BDL*	12	BDL*	8	4.0	BDL*	BDL*	BDL*	BDL*	12.8	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	37934	38194	38144	38602	37684	38142	36312	36814	36517	36984	35703	35206	IS3025(P16)84R e.02
15	COD	mg/L	21.3	7.6	16	BDL*	12	6.4	10.3	BDL*	11.2	BDL*	13.8	BDL*	APHA(22 nd Edi) 5520-D Open Reflux
A	Flora and Fauna														
16	Primary productivity	mgC/L/d ay	5.28	3.78	6.97	4.72	9.9	7.2	8.77	7.4	7.65	6	7.44	5.7	APHA (22 nd Edi) 10200-J
B	Phytoplankton														
17.1	Chlorophyll	mg/m ³	3.15	2.56	3.25	2.99	3.2	2.5	2.83	2.67	2.5	2.08	2.72	2.29	APHA (22 nd Edi) 10200-H
17.2	Phaeophytin	mg/m ³	1.6	2.1	1.4	1.9	1.3	1.8	2.48	2.26	2.13	1.73	1.91	1.52	APHA (22 nd Edi) 10200-H



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Lab Manager




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17.3	Cell Count	No. x 10 ³ /L	146	50	173	41	158	72	142	64	120	48	132	48	APHA (22 nd Edi) 10200-H
17.4	Name of Group Number and name of group species of each group	--	<i>Nitzschia sp.</i> <i>Rhizosolenia sp.</i> <i>Cheatoceus sp.</i> <i>Coscinodiscus sp.</i>	<i>Navicula sp.</i> <i>Rhizosolenia sp.</i> <i>Biddulphia sp.</i> --	<i>Nitzschia sp.</i> <i>Thallasiosira sp.</i> <i>Cheatoceus sp.</i> <i>Fragillaria sp.</i>	<i>Gyrosigma sp.</i> <i>Navicula sp.</i> <i>Coscinodiscus sp.</i> --	<i>Navicula sp.</i> <i>Thallasiosira sp.</i> <i>Biddulphia sp.</i> <i>Coscinodiscus sp.</i>	<i>Nitzschia sp.</i> <i>Synedra sp.</i> <i>Rhizosolenia sp.</i> --	<i>Melosira sp.</i> <i>Rhizosolenia sp.</i> <i>Thallasiosira sp.</i> <i>Fragillaria sp.</i>	<i>Navicula sp.</i> <i>Biddulphia sp.</i> <i>Synedra sp.</i> --	<i>Melosira sp.</i> <i>Fragillaria sp.</i> <i>Rhizosolenia sp.</i> <i>Coscinodiscus sp.</i>	<i>Navicula sp.</i> <i>Synedra sp.</i> <i>Pleurosigma sp.</i> --	<i>Thallasiosira sp.</i> <i>Nitzschia sp.</i> <i>Biddulphia sp.</i> <i>Melosira sp.</i>	<i>Navicula sp.</i> <i>Ceratium sp.</i> <i>Pleurosigma sp.</i> --	APHA (22 nd Edi) 10200-H
C Zooplanktons															
18.1	Abundance (Population)	noX10 ³ /100 m ³	56		61		65		59		39		30		APHA (22 nd Edi) 10200-G
18.2	Name of Group Number and name of group species of each group	--	Polychaetes Foraminiferans Gastropods		Polychaetes Foraminiferans Decapods		Hydrozoans Polychaetes Gastropods		Crustaceans Bivalves --		Polychaetes Copepods Decapods		Ostracods Gastropods Polychaetes		APHA (22 nd Edi) 10200-G
18.3	Total Biomass	ml/100 m ³	3.1		3.2		3.5		3.2		1.55		1.7		APHA (22 nd Edi) 10200-G
D Microbiological Parameters															
19.1	Total Bacterial Count	CFU/ml	1780		1840		1800		1920		1860		1740		IS 5402:2002
19.2	Total Coliform	/ml	Absent		Absent		Absent		Absent		Absent		Absent		APHA(22 nd Edi)9 221-D
19.3	Ecoli	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:1622:1981Edi .2.4(2003-05)
19.4	Enterococcus	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 15186 :2002
19.5	Salmonella	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 5887 (P-3)
19.6	Shigella	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 1887 (P-7)
19.7	Vibrio	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 5887 (P-5)



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RESULTS OF SEDIMENT ANALYSIS [M4 JUNA BANDAR N 22°47'57" E 069°43'620"]

SR. NO.	TEST PARAMETERS	UNIT	APRIL 2019	MAY 2019	JUNE 2019	JULY 2019	AUGUST 2019	SEPTEMBER 2019	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.48	0.66	0.62	0.4	0.62	0.59	FCO:2007
2	Phosphorus as P	µg/g	198	230	336	484	456	373	APHA(22 nd Edi) 4500 C
3	Texture	--	Sandy	Sandy	Sandy	Sandy	Sandy	Sandy	--
4	Petroleum Hydrocarbon	µg/g	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	Heavy Metals								
5.1	Aluminum as Al	%	4.83	5.17	5.14	4.72	4.85	4.92	AAS APHA 3111 B
5.2	Total Chromium as Cr ⁺³	µg/g	131	183	132	166	142	157	AAS 3111B
5.3	Manganese as Mn	µg/g	1214	1420	1218	1041	1118	1068	AAS APHA 3111 B
5.4	Iron as Fe	%	4.9	5.1	4.88	4.8	5.18	4.97	AAS APHA(22 nd Edi)3111 B
5.5	Nickel as Ni	µg/g	53	39.4	34.1	20.48	17.6	29	AAS APHA(22 nd Edi)3111 B
5.6	Copper as Cu	µg/g	29	37.4	24.6	32.4	37.4	43	AAS APHA(22 nd Edi)3111 B
5.7	Zinc as Zn	µg/g	246	344	220	276	212	284	AAS APHA(22 nd Edi)3111 B
5.8	Lead as Pb	µg/g	2.24	1.1	2.14	2.46	1.8	2.1	AAS APHA(22 nd Edi)3111 B
5.9	Mercury as Hg	µg/g	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Gastropods Decapods --	Polychaetes Bivalves --	Gastropods Crustaceans Bivalves	Gastropods Polychaetes --	Polychaetes Crustaceans --	Crustaceans Polychaetes --	APHA (22 nd Edi) 10500-C
6.2	MeioBenthos	--	Foraminiferans Bryozoans --	Foraminiferans Nematodes --	Foraminiferans -- --	Hydrozoans Nematodes --	Nematodes --	Nematods Harpacticoids	APHA (22 nd Edi) 10500-C
6.3	Population	no/m ²	706	796	733	676	588	647	APHA (22 nd Edi) 10500-C



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Lab Manager (Q)

RESULTS OF MARINE WATER [M5 TOWARDS WESTERN SIDE OF EAST PORT – N 22°46'041" E 069°47'296"]

SR. NO.	TEST PARAMETERS	UNIT	APRIL 2019		MAY 2019		JUNE 2019		JULY 2019		AUGUST 2019		SEPTEMBER 2019		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	8.13	8.09	8.11	8.03	8.18	8.15	8.22	8.14	8.1	8.14	8.14	8.11	IS3025(P11)83Re.02
2	Temperature	oC	30.3	30.0	31.8	31.6	30.1	30.0	30.7	30.2	29.8	30	29.8	29.6	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	210	234	256	271	319	346	338	359	386	403	316	335	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	3.8	BDL*	3.0	BDL*	3.4	BDL*	BDL*	BDL*	BDL*	BDL*	4.1	BDL*	IS 3025 (P44)1993Re.03E dition2.1
5	Dissolved Oxygen	mg/L	6.0	5.8	6.1	5.6	6.0	5.9	6.1	5.7	6.1	5.9	5.9	6.0	IS3025(P38)89Re.99
6	Salinity	ppt	36.5	36.8	36.9	36.4	36.3	36.6	36.4	36.7	35.2	35.5	34.2	34.4	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)55 20D
8	Nitrate as NO ₃	μmol/L	4.41	3.57	5.6	3.9	3.57	3.34	2.7	2.28	2.37	2.18	2.31	2.39	IS3025(P34)88
9	Nitrite as NO ₂	μmol/L	1.85	1.7	5.1	4.5	0.68	0.42	0.54	0.42	0.41	0.35	0.35	0.5	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	μmol/L	1.43	1.24	1.70	1.30	2.11	1.98	1.66	1.52	1.32	1.1	2.1	2.26	IS3025(P34)88CI a.2.3
11	Phosphates as PO ₄	μmol/L	1.17	1.1	1.96	1.32	2.98	2.79	1.98	1.74	1.5	1.32	1.64	1.78	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	μmol/L	7.68	6.55	12.40	9.70	6.36	5.74	4.9	4.22	4.1	3.6	4.76	5.09	IS3025(P34)88
13	Petroleum Hydrocarbon	μg/L	8.2	BDL*	22.0	BDL*	15.0	BDL*	BDL*	BDL*	BDL*	BDL*	13.2	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	38090	38280	38184	37920	37912	38198	36974	37011	36118	36827	35640	35818	IS3025(P16)84Re.02
15	COD	mg/L	17.3	6.4	15.4	BDL*	10.8	BDL*	10.6	BDL*	9.4	BDL*	14.8	BDL*	APHA(22 nd Edi) 5520-D Open Reflux
A Flora and Fauna															
16	Primary productivity	mgC/L /day	6.3	5.62	6	5.4	9.67	6.75	9.78	7.2	7.87	6.52	7.31	5.94	APHA (22 nd Edi) 10200-J
B Phytoplankton															
17.1	Chlorophyll	mg/m ³	2.5	2.18	2.24	2.08	3.2	2.34	2.4	2.08	2.18	2.02	2.61	2.13	APHA (22 nd Edi) 10200-H
17.2	Phaeophytin	mg/m ³	1.3	2.0	1.8	1.9	1.0	1.7	1.78	2.14	1.7	1.82	1.64	2.16	APHA (22 nd Edi) 10200-H



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17.3	Cell Count	No. x 10 ³ /L	178	58	150	44	168	58	162	50	1.4	36	118	42	APHA (22 nd Edi) 10200-H
17.4	Name of Group Number and name of group species of each group	--	<i>Nitzschia sp.</i> <i>Rhizosolenia sp.</i> <i>Biddulphia sp.</i> <i>Thallasiosira sp.</i>	<i>Navicula sp.</i> <i>Thallasiosira sp.</i> <i>Fragillaria sp.</i> --	<i>Navicula sp.</i> <i>Thallasiosira sp.</i> <i>Nitzschia sp.</i> <i>Coscinodiscus sp.</i> <i>Biddulphia sp.</i>	<i>Nitzschia sp.</i> <i>Coscinodiscus sp.</i> <i>Navicula sp.</i> -- --	<i>Thallasiosira sp.</i> <i>Cheatoceus sp.</i> <i>Fragillaria sp.</i> <i>Rhizosolenia sp.</i>	<i>Navicula sp.</i> <i>Thallasiosira sp.</i> <i>Pleurosigma sp.</i> -- --	<i>Navicula sp.</i> <i>Coscinodiscus sp.</i> <i>Thallasiosira sp.</i> <i>Biddulphia sp.</i> --	<i>Biddulphia sp.</i> <i>Navicula sp.</i> <i>Nitzschia sp.</i> -- --	<i>Rhizosolenia sp.</i> <i>Thallasiosira sp.</i> <i>Pleurosigma sp.</i> <i>ceratium sp.</i>	<i>Navicula sp.</i> <i>Fragillaria sp.</i> <i>Biddulphia sp.</i> --	<i>Nitzschia sp.</i> <i>Rhizosolenia sp.</i> <i>Cyclotella sp.</i> <i>Biddulphia sp.</i>	<i>Navicula sp.</i> <i>Nitzschia sp.</i> <i>Cheatoceus sp.</i> --	APHA (22 nd Edi) 10200-H
C Zooplanktons															
18.1	Abundance (Population)	noX10 ³ /100 m ³	42		48		51		57		49		41		APHA (22 nd Edi) 10200-G
18.2	Name of Group Number and name of group species of each group	--	Polychaetes Gastropods Nematodes		Polychaetes Gastropods Mysids		Hydrozoans Crustaceans Foraminiferans		Crustaceans Foraminiferans Gastropods		Polychaetes Copepods Decapods		Chaetognathes Mysids Gastropods		APHA (22 nd Edi) 10200-G
18.3	Total Biomass	ml/100 m ³	1.35		1.6		1.8		1.7		1.3		2		APHA (22 nd Edi) 10200-G
D Microbiological Parameters															
19.1	Total Bacterial Count	CFU/ml	1800		1760		1720		1840		1800		1740		IS 5402:2002
19.2	Total Coliform	/ml	Absent		Absent		Absent		Absent		Absent		Absent		APHA(22 nd Edi)92 21-D
19.3	Ecoli	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:1622:1981Edi. 2.4(2003-05)
19.4	Enterococcus	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 15186 :2002
19.5	Salmonella	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 5887 (P-3)
19.6	Shigella	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 1887 (P-7)
19.7	Vibrio	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 5887 (P-5)



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RESULTS OF SEDIMENT ANALYSIS [M5 TOWARDS WESTERN SIDE OF EAST PORT – N 22°46'041" E 069°47'296"]

SR. NO.	TEST PARAMETERS	UNIT	APRIL 2019	MAY 2019	JUNE 2019	JULY 2019	AUGUST 2019	SEPTEMBER 2019	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.71	0.48	0.56	--	0.65	0.62	FCO:2007
2	Phosphorus as P	µg/g	225	284	324	--	433	370	APHA(22 nd Edi) 4500 C
3	Texture	--	Sandy	Sandy	Sandy	--	Sandy	Sandy	--
4	Petroleum Hydrocarbon	µg/g	BDL*	BDL*	BDL*	--	BDL*	BDL*	PLPL-TPH
5	Heavy Metals								
5.1	Aluminum as Al	%	4.92	5.14	4.82	--	4.96	5.1	AAS APHA 3111 B
5.2	Total Chromium as Cr ⁺³	µg/g	138	216	142	--	162	246	AAS 3111B
5.3	Manganese as Mn	µg/g	1172	1498	1210	--	1120	1093	AAS APHA 3111 B
5.4	Iron as Fe	%	5.14	4.96	5.2	--	4.8	5.18	AAS APHA(22 nd Edi)3111 B
5.5	Nickel as Ni	µg/g	18.2	25.6	21.6	--	19.36	31.2	AAS APHA(22 nd Edi)3111 B
5.6	Copper as Cu	µg/g	29.4	30.4	25.4	--	33.4	27.4	AAS APHA(22 nd Edi)3111 B
5.7	Zinc as Zn	µg/g	218	218	230	--	244	208	AAS APHA(22 nd Edi)3111 B
5.8	Lead as Pb	µg/g	2.4	1.85	2.12	--	1.6	2.17	AAS APHA(22 nd Edi)3111 B
5.9	Mercury as Hg	µg/g	BDL*	BDL*	BDL*	--	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Gastropods Echinoderms	Gastropods Polychaetes	Gastropods Echinoderms	--	Polychaetes amphipods	Brachyurans Polychaetes	APHA (22 nd Edi) 10500-C
6.2	MeioBenthos	--	Foraminiferans --	Nematodes Foraminiferans	Nematodes Turbellaria	--	Nematodes --	Nematodes Hydrozoa	APHA (22 nd Edi) 10500-C
6.3	Population	no/m2	676	740	674	--	618	706	APHA (22 nd Edi) 10500-C



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RESULTS OF MARINE WATER [M7 EAST PORT N 22°47'120" E 069°47'110"]

SR. NO.	TEST PARAMETERS	UNIT	APRIL 2019		MAY 2019		JUNE 2019		JULY 2019		AUGUST 2019		SEPTEMBER 2019		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	8.17	8.15	8.25	8.15	8.18	8.12	8.24	8.17	8.07	8.14	8.19	8.15	IS3025(P11)83Re.02
2	Temperature	oC	31.0	30.8	31.7	37.6	30.2	30.0	30.4	30	29.8	30.2	30	30.2	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	244	268	258	296	340	379	350	369	369	405	347	356	IS3025(P17)84Re.02
4	BOD (3 Days @ 27°C)	mg/L	4	BDL*	5.0	BDL*	3.9	BDL*	3.1	BDL*	4.3	BDL*	3.8	BDL*	IS 3025 (P44)1993Re.03 Edition 2.1
5	Dissolved Oxygen	mg/L	6.4	6.0	6.6	5.8	6.4	5.8	6.1	5.7	5.9	5.7	5.8	5.9	IS3025(P38)89Re.99
6	Salinity	ppt	36	36.3	35.9	36.2	36.2	36.7	36.5	37	35	35.3	34.3	34.8	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)552 OD
8	Nitrate as NO ₃	μmol/L	6.4	4.2	4.9	3.1	3.12	2.84	2.7	2.49	2.41	2.32	2.33	2.38	IS3025(P34)88
9	Nitrite as NO ₂	μmol/L	1.35	1.56	1.5	1.65	0.83	0.68	0.63	0.38	0.26	0.14	0.39	0.46	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	μmol/L	2.10	1.98	1.80	1.44	2.14	2.00	1.74	1.43	1.37	1.18	2.2	2.31	IS3025(P34)88Cla 2.3
11	Phosphates as PO ₄	μmol/L	1.64	1.4	1.75	1.5	1.99	1.81	1.52	1.36	1.64	1.4	1.57	1.68	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	μmol/L	9.85	7.74	8.20	6.20	6.09	5.52	5.07	4.3	4.04	3.64	4.92	5.15	IS3025(P34)88
13	Petroleum Hydrocarbon	μg/L	11.0	BDL*	16.0	BDL*	14.3	BDL*	BDL*	BDL*	BDL*	BDL*	12.9	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	37103	37814	36812	37610	37214	37984	36972	37321	36816	37058	35728	35824	IS3025(P16)84Re.02
15	COD	mg/L	12.0	BDL*	24	BDL*	16	BDL*	13.2	BDL*	15.6	8.4	12.6	BDL*	APHA(22 nd Edi) 5520-D Open Reflux
A Flora and Fauna															
16	Primary productivity	mgC/L /day	6.63	4.95	6.75	4.16	8.77	6.3	9.33	7.2	8.1	6.52	7	5.71	APHA (22 nd Edi) 10200-J
B Phytoplankton															
17.1	Chlorophyll	mg/m ³	3.31	2.13	2.99	2.29	2.61	2.39	2.93	2.5	2.67	2.34	2.5	2.08	APHA (22 nd Edi) 10200-H
17.2	Phaeophytin	mg/m ³	1.3	2.1	1.9	1.9	2.6	1.4	1.7	2.01	1.55	1.91	1.6	1.84	APHA (22 nd Edi) 10200-H
17.3	Cell Count	No. x	184	62	168	72	150	60	136	54	104	50	114	46	APHA (22 nd Edi)


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10 ³ /L															10200-H
17.4	Name of Group Number and name of group species of each group	--	<i>Coscinodiscus</i> sp.	<i>Synedra</i> sp.	<i>Thalassionema</i> sp.	<i>Navicula</i> sp.	<i>Pleurosigma</i> sp.	<i>Navicula</i> sp.	<i>Nitzschia</i> sp.	<i>Navicula</i> sp.	<i>Synedra</i> sp.	<i>Thalassiosira</i> sp.	<i>Ceratium</i> sp.	<i>Cyclotella</i> sp.	APHA (22 nd Edi) 10200-H
			<i>Rhizosolenia</i> sp.	<i>Navicula</i> sp.	<i>Nitzschia</i> sp.	<i>Thalassionema</i> sp.	<i>Rhizosolenia</i> sp.	<i>Synedra</i> sp.	<i>Coscinodiscus</i> sp.	<i>Nitzschia</i> sp.	<i>Pleurosigma</i> sp.	<i>Thalassiosira</i> sp.	<i>Biddulphia</i> sp.	<i>Fragillaria</i> sp.	
			<i>Navicula</i> sp.	<i>Rhizosolenia</i> sp.	<i>Rhizosolenia</i> sp.	--	<i>Thalassionema</i> sp.	<i>Rhizosolenia</i> sp.	<i>Rhizosolenia</i> sp.	<i>Thalassionema</i> sp.	<i>Nitzschia</i> sp.	--	<i>Skeletonema</i> sp.	<i>Navicula</i> sp.	
			<i>Biddulphia</i> sp.	--	<i>Coscinodiscus</i> sp.	--	<i>Thalassionema</i> sp.	--	<i>Skeletonema</i> sp.	--	<i>Rhizosolenia</i> sp.	--	<i>Coscinodiscus</i> sp.	--	
			--	--	--	--	<i>Coscinodiscus</i> sp.	--	--	--	<i>Rhizosolenia</i> sp.	--	<i>Coscinodiscus</i> sp.	--	
C	Zooplanktons														
18.1	Abundance (Population)	noX10 ³ / 100 m ³	42	49	53	48	43	46							APHA (22 nd Edi) 10200-G
18.2	Name of Group Number and name of group species of each group	--	Copepods Ostracods Polychaetes	Polychaetes Gastropods --	Polychaetes Ctenophores Chaetognathes	Polychaetes Crustaceans Bivalves	Polychaetes Decapods Isopods	Ostracods Gastropods Mysids							APHA (22 nd Edi) 10200-G
18.3	Total Biomass	ml/100 m ³	2.6	2.75	2.9	2.1	1.9	2.1							APHA (22 nd Edi) 10200-G
D	Microbiological Parameters														
19.1	Total Bacterial Count	CFU/ml	1850	1840	1780	1800	1750	1820							IS 5402:2002
19.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent							APHA(22 nd Edi)922 1-D
19.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent							IS:1622:1981Edi.2 .4(2003-05)
19.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent							IS : 15186 :2002
19.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent							IS : 5887 (P-3)
19.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent							IS : 1887 (P-7)
19.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent							IS : 5887 (P-5)



H. T. Shah

Lab Manager




Dr. Arun Bajpai

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RESULTS OF MARINE WATER [M8 RIGHT SIDE OF BOCHA CREEK N 22°45'987" E 069°43'119"]

SR. NO.	TEST PARAMETERS	UNIT	APRIL 2019		MAY 2019		JUNE 2019		JULY 2019		AUGUST 2019		SEPTEMBER 2019		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	8.11	8.09	8.22	8.15	8.19	8.12	8.25	8.19	8.04	7.99	8.17	8.2	IS3025(P11)83Re.02
2	Temperature	oC	30.9	30.6	31.7	31.4	30.1	30.0	30.5	30.1	29.8	30	29.9	29.5	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	196	214	252	226	302	324	326	341	370	402	317	326	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	4.9	BDL*	3.6	BDL*	4.6	BDL*	3.7	BDL*	2.8	BDL*	3.9	BDL*	IS 3025 (P44)1993Re.03E dition2.1
5	Dissolved Oxygen	mg/L	5.9	5.7	6.4	6.2	6.0	5.9	6	5.7	6	5.8	5.9	6.1	IS3025(P38)89Re.99
6	Salinity	ppt	36.5	36.8	36.9	37.2	36.2	36.6	36.6	37.3	34.8	35.2	34.1	34.4	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)552 OD
8	Nitrate as NO ₃	μmol/L	4.28	3.52	5.6	3.9	3.36	3.1	2.84	2.57	2.13	1.9	2.1	2.17	IS3025(P34)88
9	Nitrite as NO ₂	μmol/L	0.8	0.74	1.4	1.1	0.92	0.79	0.81	0.64	0.48	0.62	0.29	0.35	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	μmol/L	1.97	1.65	2.16	1.50	1.76	1.48	1.52	1.31	1.27	1.1	1.53	1.61	IS3025(P34)88Cla.2.3
11	Phosphates as PO ₄	μmol/L	1.76	1.57	1.98	1.75	1.86	1.55	1.7	1.49	1.4	1.31	1.28	1.34	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	μmol/L	7.05	4.40	9.16	6.50	6.04	5.37	5.17	4.52	3.88	3.62	3.92	4.13	IS3025(P34)88
13	Petroleum Hydrocarbon	μg/L	12.6	BDL*	16.0	BDL*	13.2	BDL*	BDL*	BDL*	BDL*	BDL*	7.4	3.6	PLPL-TPH
14	Total Dissolved Solids	mg/L	38019	38349	37410	37676	37514	37912	36844	37542	36358	36756	35698	35718	IS3025(P16)84Re.02
15	COD	mg/L	14.3	9.6	15.0	BDL*	13.2	BDL*	10.3	BDL*	8.7	BDL*	12.4	BDL*	APHA(22 nd Edi) 5520-D Open Reflux
A	Flora and Fauna														
16	Primary productivity	mgC/L /day	6.52	5.0	6	5.0	18.55	7.4	8.66	7.8	7.65	6.9	7.29	6.16	APHA (22 nd Edi) 10200-J
B	Phytoplankton														
17.1	Chlorophyll	mg/m ³	2.62	2.56	2.72	2.24	3.15	2.83	2.67	2.24	3.04	2.56	2.77	2.5	APHA (22 nd Edi) 10200-H
17.2	Phaeophytin	mg/m ³	2.0	1.9	1.9	2.3	1.5	1.7	2.26	2.69	1.29	1.47	1.78	1.42	APHA (22 nd Edi) 10200-H



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17.3	Cell Count	No. x 10 ³ /L	202	82	176	60	188	50	172	58	124	46	136	54	APHA (22 nd Edi) 10200-H
17.4	Name of Group Number and name of group species of each group	--	<i>Rhizosolenia</i> sp. <i>Thalassiosira</i> sp. <i>Coscinodiscus</i> sp. <i>Synedra</i> sp.	<i>Synedra</i> sp. <i>Cyclotella</i> sp. <i>Biddulphia</i> sp. --	<i>Navicula</i> sp. <i>Cyclotella</i> sp. <i>Coscinodiscus</i> sp. <i>Rhizosolenia</i> sp.	<i>Nitzschia</i> sp. <i>Biddulphia</i> sp. <i>Coscinodiscus</i> sp. --	<i>Nitzschia</i> sp. <i>Cyclotella</i> sp. <i>Thalassiosira</i> sp. <i>Rhizosolenia</i> sp.	<i>Navicula</i> sp. <i>Biddulphia</i> sp. <i>Cyclotella</i> sp. --	<i>Navicula</i> sp. <i>Thalassiosira</i> sp. <i>Coscinodiscus</i> sp. <i>Amphipro</i> sp.	<i>Nitzschia</i> sp. <i>Pleurosigma</i> sp. <i>Synedra</i> sp. --	<i>Cyclotella</i> sp. <i>Skeletonema</i> sp. <i>Nitzschia</i> sp. <i>Rhizosolenia</i> sp.	<i>Nitzschia</i> sp. <i>Fragillaria</i> sp. <i>Synedra</i> sp. --	<i>Thalassiosira</i> sp. <i>Amphipro</i> sp. <i>Pleurosigma</i> sp. <i>Cheatecer</i> sp.	<i>Pleurosigma</i> sp. <i>Nitzschia</i> sp. <i>Biddulphia</i> sp. --	APHA (22 nd Edi) 10200-H
C Zooplanktons															
18.1	Abundance (Population)	noX10 ³ /100 m ³	36		50		53		62		45		55		APHA (22 nd Edi) 10200-G
18.2	Name of Group Number and name of group species of each group	--	Polychaetes Ostracods Decapods		Crustaceans Polychaetes Foraminiferans		Polychaetes Crustaceans Bivalves		Polychaetes Bivalves Decapods		Polychaetes Isopods Amphipods		Gastropods Mysids Ostracods		APHA (22 nd Edi) 10200-G
18.3	Total Biomass	ml/100 m ³	2.4		2.55		2.7		2.65		2.1		3.4		APHA (22 nd Edi) 10200-G
D Microbiological Parameters															
19.1	Total Bacterial Count	CFU/ml	1900		1880		1820		1760		1700		1810		IS 5402:2002
19.2	Total Coliform	/ml	Absent		Absent		Absent		Absent		Absent		Absent		APHA(22 nd Edi)922 1-D
19.3	Ecoli	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:1622:1981Edi. 2.4(2003-05)
19.4	Enterococcus	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 15186 :2002
19.5	Salmonella	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 5887 (P-3)
19.6	Shigella	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 1887 (P-7)
19.7	Vibrio	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 5887 (P-5)



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RESULTS OF SEDIMENT ANALYSIS [M8 RIGHT SIDE OF BOCHA CREEK – N 22°45'987" E 069°43'119"]

SR. NO.	TEST PARAMETERS	UNIT	APRIL 2019	MAY 2019	JUNE 2019	JULY 2019	AUGUST 2019	SEPTEMBER 2019	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.68	0.8	0.72	0.6	0.68	0.61	FCO:2007
2	Phosphorus as P	µg/g	278	312	412	483	432	376	APHA(22 nd Edi) 4500 C
3	Texture	--	Sandy	Sandy	Sandy	Sandy	Sandy	Sandy	--
4	Petroleum Hydrocarbon	µg/g	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	Heavy Metals								
5.1	Aluminum as Al	%	5.12	4.86	5.14	4.7	4.75	4.95	AAS APHA 3111 B
5.2	Total Chromium as Cr ⁺³	µg/g	203	244	138	164	142	213	AAS 3111B
5.3	Manganese as Mn	µg/g	1180	1350	1203	1036	1025	1054	AAS APHA 3111 B
5.4	Iron as Fe	%	5.15	5.26	5.1	4.88	5.15	5.2	AAS APHA(22 nd Edi)3111 B
5.5	Nickel as Ni	µg/g	36.8	42.6	29	17.83	21.8	26	AAS APHA(22 nd Edi)3111 B
5.6	Copper as Cu	µg/g	31.4	41.6	26.4	25.4	16.4	37	AAS APHA(22 nd Edi)3111 B
5.7	Zinc as Zn	µg/g	226	239	240	210	254	210	AAS APHA(22 nd Edi)3111 B
5.8	Lead as Pb	µg/g	2.4	1.62	2.29	1.97	1.5	1.93	AAS APHA(22 nd Edi)3111 B
5.9	Mercury as Hg	µg/g	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Polychaetes Crustaceans --	Polychaetes Echinoderms --	Bivalves Gastropods Polychaetes	Bivalves Gastropods ---	Bivalves Polychaetes --	Polychaetes Decapods --	APHA (22 nd Edi) 10500-C
6.2	MeioBenthos	--	Foraminiferans Nematodes	Foraminiferans Hydrozoans	Gastropods Nematodes	Nematodes Hydrozoans	Nematodes --	Ostracodes Ciliates	APHA (22 nd Edi) 10500-C
6.3	Population	no/m ²	618	540	706	765	674	616	APHA (22 nd Edi) 10500-C



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Lab Manager




Dr. Arun Bajpai

Lab Manager (Q)

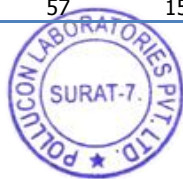
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RESULTS OF MARINE WATER [M11 MPT T1 JETTY N 22°42'278" E 069°43'450"]

SR. NO.	TEST PARAMETERS	UNIT	APRIL 2019		MAY 2019		JUNE 2019		JULY 2019		AUGUST 2019		SEPTEMBER 2019		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	8.13	8.09	8.17	8.09	8.19	8.13	8.24	8.17	8.1	8.03	8.12	8.07	IS3025(P11)83Re.02
2	Temperature	oC	30.5	30.3	31.6	31.4	30.1	29.9	30.2	30	30	30.2	29.9	29.7	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	203	226	272	251	239	258	308	313	384	419	416	432	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	5.2	BDL*	4.0	BDL*	3.7	BDL*	3.2	BDL*	BDL*	BDL*	3.2	BDL*	IS 3025 (P44)1993Re.03E dition2.1
5	Dissolved Oxygen	mg/L	6.0	5.9	6.2	6.0	6.0	5.8	6.0	5.7	6.0	5.8	5.8	5.9	IS3025(P38)89Re.99
6	Salinity	ppt	36.4	36.7	36.9	37	36.3	36.7	36.7	37	35.4	35.9	34.2	34.6	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)552 OD
8	Nitrate as NO ₃	μmol/L	4.71	3.57	4.95	4.1	2.84	2.69	2.46	2.24	1.7	1.56	1.92	2.12	IS3025(P34)88
9	Nitrite as NO ₂	μmol/L	0.89	0.75	1.18	1.25	0.72	0.56	0.51	0.36	0.48	0.29	0.3	0.46	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	μmol/L	1.88	1.26	1.90	1.60	1.84	1.71	1.68	1.43	1.33	1.12	1.28	1.36	IS3025(P34)88Cla.2.3
11	Phosphates as PO ₄	μmol/L	1.6	1.39	1.75	1.56	2.36	2.14	1.97	1.7	1.64	1.36	1.58	1.65	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	μmol/L	7.48	5.59	8.00	7.00	5.40	4.96	4.65	4.03	3.51	2.97	3.5	3.94	IS3025(P34)88
13	Petroleum Hydrocarbon	μg/L	10.3	BDL*	BDL*	BDL*	6.2	BDL*	10.41	BDL*	BDL*	BDL*	10.6	5.2	PLPL-TPH
14	Total Dissolved Solids	mg/L	37918	38910	37916	37514	37580	38287	36902	37124	36252	36817	35314	35284	IS3025(P16)84Re.02
15	COD	mg/L	17.3	6.3	18	BDL*	11	BDL*	9.2	BDL*	8.1	BDL*	15	BDL*	APHA(22 nd Edi) 5520-D Open Reflux
A Flora and Fauna															
16	Primary productivity	mgC/L /day	3.52	5.17	5.85	5.28	9.9	8.32	8.78	7.53	8.1	7.42	7.65	5.96	APHA (22 nd Edi) 10200-J
B Phytoplankton															
17.1	Chlorophyll	mg/m ³	3.52	2.93	3.31	2.61	3.52	2.77	2.8	2.50	3.31	2.40	2.83	2.56	APHA (22 nd Edi) 10200-H
17.2	Phaeophytin	mg/m ³	2.2	2.4	2.5	2.9	2.0	2.6	1.75	2.42	1.03	2.01	1.84	1.92	APHA (22 nd Edi) 10200-H
17.3	Cell Count	No. x	153	64	141	57	154	41	136	50	123	44	117	50	APHA (22 nd Edi)



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		10 ³ /L												10200-H
17.4	Name of Group Number and name of group species of each group	--	<i>Rhizosolenia</i> sp. <i>Coscinodiscus</i> sp. <i>Biddulphia</i> sp. <i>Navicula</i> sp.	<i>Nitzschia</i> sp. <i>Biddulphia</i> sp. <i>Synedra</i> sp. --	<i>Rhizosolenia</i> sp. <i>Biddulphia</i> sp. <i>Thalassionema</i> sp. <i>Navicula</i> sp.	<i>Nitzschia</i> sp. <i>Rhizosolenia</i> sp. <i>Coscinodiscus</i> sp. --	<i>Navicula</i> sp. <i>Rhizosolenia</i> sp. <i>Coscinodiscus</i> sp. <i>Cyclotella</i> sp.	<i>Nitzschia</i> sp. <i>Coscinodiscus</i> sp. <i>Rhizosolenia</i> sp. --	<i>Nitzschia</i> sp. <i>Navicula</i> sp. <i>Thalassionema</i> sp. <i>Coscinodiscus</i> sp.	<i>peridinium</i> sp. <i>Melosira</i> sp. <i>Nitzschia</i> sp. <i>Cheateoceros</i> sp.	<i>Nitzschia</i> sp. <i>Pleurosigma</i> sp. <i>Fragillaria</i> sp. --	<i>Melosira</i> sp. <i>Rhizosolenia</i> sp. <i>Skeletonema</i> sp. <i>Fragillaria</i> sp.	<i>Cheateoceros</i> sp. <i>Nitzschia</i> sp. <i>Biddulphia</i> sp. --	APHA (22 nd Edi) 10200-H
C Zooplanktons														
18.1	Abundance (Population)	noX10 ³ / 100 m ³	46		52		49		53		48		56	APHA (22 nd Edi) 10200-G
18.2	Name of Group Number and name of group species of each group	--	Polychaetes Gastropods Mysids		Crustaceans Gastropods Decapods		Polychaetes Crustaceans --		Polychaetes Gastropods Decapods		Ostracodes Hydrozoans Polychaetes		Polychaetes Mysids Gastropods	APHA (22 nd Edi) 10200-G
18.3	Total Biomass	ml/100 m ³	2.1		2.55		2.10		1.9		1.6		2.1	APHA (22 nd Edi) 10200-G
D Microbiological Parameters														
19.1	Total Bacterial Count	CFU/ml	1780		1750		1790		1850		1750		1880	IS 5402:2002
19.2	Total Coliform	/ml	Absent		Absent		Absent		Absent		Absent		Absent	APHA(22 nd Edi)922 1-D
19.3	Ecoli	/ml	Absent		Absent		Absent		Absent		Absent		Absent	IS:1622:1981Edi. 2.4(2003-05)
19.4	Enterococcus	/ml	Absent		Absent		Absent		Absent		Absent		Absent	IS : 15186 :2002
19.5	Salmonella	/ml	Absent		Absent		Absent		Absent		Absent		Absent	IS : 5887 (P-3)
19.6	Shigella	/ml	Absent		Absent		Absent		Absent		Absent		Absent	IS : 1887 (P-7)
19.7	Vibrio	/ml	Absent		Absent		Absent		Absent		Absent		Absent	IS : 5887 (P-5)



H. T. Shah

Lab Manager





Dr. Arun Bajpai

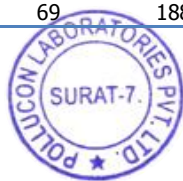
Lab Manager (Q)


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RESULTS OF MARINE WATER [M12 SPM N 22°40'938" E 069°39'191"]

SR. NO.	TEST PARAMETERS	UNIT	APRIL 2019		MAY 2019		JUNE 2019		JULY 2019		AUGUST 2019		SEPTEMBER 2019		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	8.17	8.12	8.30	8.21	8.19	8.14	8.24	8.18	8.12	8.07	8.15	8.11	IS3025(P11)83Re.02
2	Temperature	oC	30.6	30.3	31.9	31.5	30.2	30.0	30.3	30	30	30.3	29.9	29.6	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	202	231	227	248	317	351	328	349	392	424	370	384	IS3025(P17)84Re.02
4	BOD (3 Days @ 27°C)	mg/L	5.1	BDL*	6.0	BDL*	3.9	BDL*	3.3	BDL*	BDL*	BDL*	3.5	BDL*	IS 3025 (P44)1993Re.03E dition2.1
5	Dissolved Oxygen	mg/L	5.9	5.7	6.2	5.9	5.8	6.0	6.0	5.7	6.1	5.8	6.0	5.9	IS3025(P38)89Re.99
6	Salinity	ppt	36.2	36.5	36.9	37.1	37.1	37.6	37	37.7	35.5	36	34.6	35.1	APHA (22 nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22 nd Edi)552 OD
8	Nitrate as NO ₃	μmol/L	2.9	2.32	2.5	2.1	3.14	3	2.98	2.7	1.64	1.32	1.9	2.03	IS3025(P34)88
9	Nitrite as NO ₂	μmol/L	0.95	0.82	1.1	0.9	0.83	0.69	0.74	0.59	0.51	0.29	0.34	0.42	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH ₃	μmol/L	1.90	1.72	1.70	1.60	2.10	1.97	1.83	1.64	1.32	1.1	1.56	1.62	IS3025(P34)88Cla.2.3
11	Phosphates as PO ₄	μmol/L	1.28	1.01	1.58	1.34	2.16	2.1	2	1.83	1.56	1.19	1.48	1.57	APHA(22 nd Edi) 4500 C
12	Total Nitrogen	μmol/L	5.74	4.86	5.40	3.90	6.07	5.66	5.55	4.93	3.47	2.71	3.8	4.07	IS3025(P34)88
13	Petroleum Hydrocarbon	μg/L	10.4	BDL*	13.0	BDL*	8.2	BDL*	10.3	BDL*	BDL*	BDL*	12.9	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	37610	37913	37847	38013	38103	38914	36902	37124	35917	36318	35390	36298	IS3025(P16)84Re.02
15	COD	mg/L	17.2	9.8	23	BDL*	16	6.2	10.4	BDL*	9.2	BDL*	15	BDL*	APHA(22 nd Edi) 5520-D Open Reflux
A Flora and Fauna															
16	Primary productivity	mgC/L /day	4.95	3.15	4.72	3.6	8.55	7.42	9.2	6.97	8.3	6.75	7.69	7	APHA (22 nd Edi) 10200-J
B Phytoplankton															
17.1	Chlorophyll	mg/m ³	2.64	2.40	2.48	2.29	2.69	2.24	3.09	2.61	2.77	2.34	2.83	2.4	APHA (22 nd Edi) 10200-H
17.2	Phaeophytin	mg/m ³	2.0	2.1	2.3	2.3	1.9	2.7	1.8	2.06	2.53	2.29	2.48	2.23	APHA (22 nd Edi) 10200-H
17.3	Cell Count	No. x	146	73	134	69	188	76	204	68	196	54	182	68	APHA (22 nd Edi)


H. T. Shah
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10 ³ /L															10200-H
17.4	Name of Group Number and name of group species of each group	--	<i>Coscinodiscus sp.</i>	<i>Nitzschia sp.</i>	<i>Coscinodiscus sp.</i>	<i>Navicula sp.</i>	<i>Nitzschia sp.</i>	<i>Navicula sp.</i>	<i>Nitzschia sp.</i>	<i>Navicula sp.</i>	<i>Biddulphia sp.</i>	<i>Nitzschia sp.</i>	<i>Thallasiosira sp.</i>	<i>Nitzschia sp.</i>	APHA (22 nd Edi) 10200-H
			<i>Fragillaria sp.</i>	<i>Coscinodiscus sp.</i>	<i>Nitzschia sp.</i>	<i>Synedra sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	
			<i>Biddulphia sp.</i>	<i>Synedra sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	<i>Thallasiosira sp.</i>	
			<i>Thallasiosira sp.</i>	--	--	--	--	--	--	--	--	--	--	--	
C Zooplanktons															
18.1	Abundance (Population)	noX10 ³ /100 m ³	39		43		50		56		46		51		APHA (22 nd Edi) 10200-G
18.2	Name of Group Number and name of group species of each group	--	Polychaetes Crustaceans Mysids		Polychaetes Gastropods Foraminiferans		Gastropods Crustaceans Mysids		Polychaetes Crustaceans Bivalves		Polychaetes Decapods Ostracodes		Ostracods Mysids Ctenophores		APHA (22 nd Edi) 10200-G
18.3	Total Biomass	ml/100 m ³	1.6		1.8		1.95		2.0		1.6		2.0		APHA (22 nd Edi) 10200-G
D Microbiological Parameters															
19.1	Total Bacterial Count	CFU/ml	1750		1860		1810		1790		1700		1780		IS 5402:2002
19.2	Total Coliform	/ml	Absent		Absent		Absent		Absent		Absent		Absent		APHA(22 nd Edi)922 1-D
19.3	Ecoli	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:1622:1981Edi. 2.4(2003-05)
19.4	Enterococcus	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 15186 :2002
19.5	Salmonella	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 5887 (P-3)
19.6	Shigella	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 1887 (P-7)
19.7	Vibrio	/ml	Absent		Absent		Absent		Absent		Absent		Absent		IS : 5887 (P-5)



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RESULTS OF ETP WATER OUTLET

SR. NO.	PARAMETERS	UNIT	RESULTS OF ETP WATER OUTLET						GPCB Limit	TEST METHOD
			05/04/2019	05/07/2019	04/06/2019	03/07/2019	06/08/2019	06/09/2019		
1	Colour	Co-pt	70	50	40	50	40	50	100	IS3025(P4)83Re.02
2	pH	--	7.32	7.90	7.01	7.65	7.08	6.76	6.5 TO 8.5	IS3025(P11)83Re.02
3	Temperature	°C	31.9	32	31.9	31.5	31.3	32	40	IS3025(P9)84Re.02
4	Total Suspended Solids	mg/L	52	84	70	56	42	64	100	IS3025(P17)84Re.02
5	Total Dissolved Solids	mg/L	1903	2041	2096	2084	2060	1976	2100	IS3025(P16)84Re.02
6	COD	mg/L	80	84	98	88	78	92	100	APHA(22 nd Edi) 5520-D Open Reflux
7	BOD (3 Days @ 27 °C)	mg/L	24	28	30	24	18	24	30	IS 3025 (P44)1993Re.03Edition2.1
8	Chloride as Cl	mg/L	572	559	598	584	539	589	600	IS3025(P32)88Re.99
9	Oil & Grease	mg/L	3.8	2.4	2.9	3.4	5.2	3.2	10	APHA(22 nd Edi)5520D
10	Sulphate as SO ₄	mg/L	156	480	502	455	392	412	1000	APHA(22 nd Edi)4500 SO ₄ E
11	Ammonical Nitrogen as NH ₃	mg/L	10.2	6.8	11.1	14.8	10.6	7.4	50	IS3025(P34)88Cla.2.3
12	Phenolic Compound	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	1	IS3025(P43)92Re.03
13	Copper as Cu	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	3	AAS APHA(22 nd Edi)3111 B
14	Lead as Pb	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	0.1	AAS APHA(22 nd Edi)3111 B
15	Sulphide as S	mg/L	1.6	2.4	1.6	1.2	1.4	1.2	2	APHA(22 nd Edi) 4500-S
16	Cadmium as Cd	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	2	AAS APHA(22 nd Edi)3111 B
17	Fluoride as F	mg/L	0.6	0.55	0.70	0.55	0.6	0.75	2	APHA(22 nd Edi) 4500 F D SPANDS

*Below detection limit



H. T. Shah

Lab Manager




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Lab Manager (Q)

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RESULT OF AMBIENT AIR QUALITY MONITORING**ADANI PORT – T1 TERMINAL NR.MARINE BUILDING**

Sr. No	Date of Sampling	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM 2.5) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO2) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO2) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
1	02/04/2019	81.68	41.24	15.65	35.64	0.50	BDL*	BDL*
2	03/04/2019	94.36	52.77	11.69	21.35	0.81	BDL*	BDL*
3	08/04/2019	77.51	49.27	8.46	18.67	0.47	BDL*	BDL*
4	10/04/2019	80.33	35.64	10.36	37.63	0.62	BDL*	BDL*
5	15/04/2019	96.24	56.36	13.72	31.58	0.68	BDL*	BDL*
6	17/04/2019	75.67	42.68	20.36	41.30	0.79	BDL*	BDL*
7	22/04/2019	86.36	36.50	24.29	39.47	0.30	BDL*	BDL*
8	24/04/2019	78.45	45.36	21.39	34.57	0.63	BDL*	BDL*
9	29/04/2019	92.42	39.26	18.36	30.45	0.98	BDL*	BDL*
10	01/05/2019	78.32	46.35	20.33	31.50	0.66	BDL*	BDL*
11	06/05/2019	83.50	38.31	17.52	39.30	0.55	BDL*	BDL*
12	09/05/2019	94.36	54.38	22.51	45.36	0.71	BDL*	BDL*
13	13/05/2019	98.30	44.53	13.43	22.59	0.89	BDL*	BDL*
14	15/05/2019	84.32	47.87	11.26	40.24	0.34	BDL*	BDL*
15	20/05/2019	79.58	37.53	24.43	36.41	0.65	BDL*	BDL*
16	22/05/2019	87.58	43.59	21.19	32.42	0.72	BDL*	BDL*
17	27/05/2019	95.43	52.73	16.53	38.61	0.54	BDL*	BDL*
18	29/05/2019	80.65	40.25	19.62	43.56	0.82	BDL*	BDL*
19	03/06/2019	74.31	42.60	11.60	34.34	0.26	BDL*	BDL*
20	05/06/2019	88.69	37.53	20.33	40.25	0.72	BDL*	BDL*
21	10/06/2019	71.63	40.29	17.44	27.64	0.56	BDL*	BDL*
22	17/06/2019	92.48	36.29	21.53	30.24	0.50	BDL*	BDL*
23	19/06/2019	76.31	39.55	18.25	28.58	0.58	BDL*	BDL*
24	24/06/2019	96.38	45.36	23.49	39.46	0.55	BDL*	BDL*
25	26/06/2019	82.56	50.55	19.54	37.56	0.64	BDL*	BDL*
26	01/07/2019	94.38	55.53	20.31	44.29	0.85	BDL*	BDL*
27	03/07/2019	85.38	45.36	23.69	37.59	0.48	BDL*	BDL*
28	08/07/2019	68.71	38.48	16.32	33.66	0.65	BDL*	BDL*
29	10/07/2019	77.55	47.34	21.25	39.27	0.73	BDL*	BDL*
30	15/07/2019	69.62	35.47	12.72	36.05	0.29	BDL*	BDL*

Continue ...

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Lab Manager



Dr. Arun Bajpai

Lab Manager (Q)

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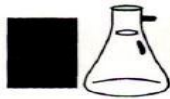
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RESULT OF AMBIENT AIR QUALITY MONITORING

ADANI PORT – T1 TERMINAL NR. (MARINE BUILDING)								
Sr.N o.	Date of Sampling	Particulate Matter (PM ₁₀) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM _{2.5}) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO ₂) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO ₂) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
31	17/07/2019	90.42	52.48	25.68	41.27	0.62	BDL*	BDL*
32	22/07/2019	88.65	34.28	22.67	31.84	0.31	BDL*	BDL*
33	24/07/2019	79.80	42.35	17.64	40.68	0.79	BDL*	BDL*
34	29/07/2019	66.54	39.22	19.55	29.47	0.63	BDL*	BDL*
35	31/07/2019	81.29	44.25	15.59	34.27	0.87	BDL*	BDL*
36	05/08/2019	83.63	44.37	14.15	30.40	0.74	BDL*	BDL*
37	07/08/2019	92.92	50.30	10.53	33.50	0.68	BDL*	BDL*
38	12/08/2019	88.67	35.68	18.65	38.23	0.76	BDL*	BDL*
39	14/08/2019	69.86	31.85	20.24	35.31	0.87	BDL*	BDL*
40	19/08/2019	81.34	40.83	15.41	39.51	0.64	BDL*	BDL*
41	21/08/2019	78.65	43.38	22.26	43.58	0.39	BDL*	BDL*
42	26/08/2019	67.56	36.34	17.53	37.55	0.52	BDL*	BDL*
43	28/08/2019	80.34	39.38	23.56	36.26	0.50	BDL*	BDL*
44	03/09/2019	80.33	42.60	12.68	27.64	0.50	BDL*	BDL*
45	05/09/2019	70.36	29.25	18.57	31.61	0.58	BDL*	BDL*
46	09/09/2019	62.70	36.58	14.57	34.25	0.46	BDL*	BDL*
47	11/09/2019	75.67	32.67	24.66	39.31	0.26	BDL*	BDL*
48	16/09/2019	64.39	38.27	17.64	42.67	0.40	BDL*	BDL*
49	18/09/2019	87.70	47.29	9.68	29.68	0.47	BDL*	BDL*
50	23/09/2019	77.68	37.61	21.54	32.52	0.34	BDL*	BDL*
51	25/09/2019	89.33	43.55	16.65	37.56	0.62	BDL*	BDL*
52	30/09/2019	79.39	39.67	19.68	35.67	0.49	BDL*	BDL*
	TEST METHOD	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)	Gravimetric-CPCB - Method (Vol.I,May-2011)	IS:5182(Part II):Improved West and Gaeke	IS:5182(Part VI):Modified Jacob & Hochheiser (NaOH-NaAsO ₂)	NDIR Digital Gas Analyzer	SOP: HC: GC/GCMS/Gas analyzer	IS 5182 (Part XI):2006/CPCB Method

*Below detection limit

H. T. Shah**Lab Manager****Dr. Arun Bajpai****Lab Manager (Q)**

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RESULT OF AMBIENT AIR QUALITY MONITORING

NEAR FIRE STATION								
Sr. No.	Date of Sampling	Particulate Matter (PM ₁₀) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM _{2.5}) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO ₂) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO ₂) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
1	02/04/2019	52.74	22.65	22.70	32.44	0.44	BDL*	BDL*
2	03/04/2019	60.32	32.60	18.64	16.29	0.60	BDL*	BDL*
3	08/04/2019	70.67	40.62	14.37	26.33	0.73	BDL*	BDL*
4	10/04/2019	58.43	26.82	21.65	30.57	0.82	BDL*	BDL*
5	15/04/2019	74.56	44.51	7.61	23.42	0.57	BDL*	BDL*
6	17/04/2019	67.81	39.42	15.61	34.36	0.66	BDL*	BDL*
7	22/04/2019	55.44	23.64	19.67	31.59	1.00	BDL*	BDL*
8	24/04/2019	72.66	41.56	13.57	27.52	0.69	BDL*	BDL*
9	29/04/2019	82.60	34.26	10.54	36.35	0.93	BDL*	BDL*
10	01/05/2019	74.38	42.69	11.66	38.36	0.95	BDL*	BDL*
11	06/05/2019	65.34	29.34	24.36	35.53	0.50	BDL*	BDL*
12	09/05/2019	81.24	47.27	17.56	40.21	0.68	BDL*	BDL*
13	13/05/2019	79.68	39.30	20.27	17.49	0.74	BDL*	BDL*
14	15/05/2019	58.83	28.68	13.48	32.54	0.47	BDL*	BDL*
15	20/05/2019	82.32	45.25	6.61	29.27	0.87	BDL*	BDL*
16	22/05/2019	66.34	36.36	15.37	25.36	0.78	BDL*	BDL*
17	27/05/2019	86.80	48.64	8.36	19.54	0.85	BDL*	BDL*
18	29/05/2019	61.35	27.36	16.26	34.59	0.69	BDL*	BDL*
19	03/06/2019	49.32	27.60	15.57	27.51	0.37	BDL*	BDL*
20	05/06/2019	70.29	34.30	18.62	23.42	0.65	BDL*	BDL*
21	10/06/2019	65.31	39.34	11.51	19.32	0.78	BDL*	BDL*
22	17/06/2019	85.33	40.21	5.69	25.61	0.66	BDL*	BDL*
23	19/06/2019	56.53	32.56	13.58	22.69	0.36	BDL*	BDL*
24	24/06/2019	80.34	41.86	14.99	34.22	0.46	BDL*	BDL*
25	26/06/2019	74.38	21.61	9.65	28.45	0.57	BDL*	BDL*
26	01/07/2019	70.54	32.65	18.64	36.50	0.60	BDL*	BDL*
27	03/07/2019	65.41	28.43	8.09	25.50	0.55	BDL*	BDL*
28	08/07/2019	50.64	25.50	14.49	23.43	0.37	BDL*	BDL*
29	10/07/2019	67.68	33.27	10.40	30.29	0.64	BDL*	BDL*
30	15/07/2019	54.25	21.20	17.55	29.42	0.40	BDL*	BDL*

Continue ...

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Lab Manager



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Lab Manager (Q)

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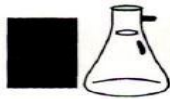
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RESULT OF AMBIENT AIR QUALITY MONITORING

NEAR FIRE STATION								
Sr.N o.	Date of Sampling	Particulate Matter (PM ₁₀) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM _{2.5}) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO ₂) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO ₂) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
31	17/07/2019	74.59	35.37	15.60	37.50	0.50	BDL*	BDL*
32	22/07/2019	82.48	37.10	12.38	26.76	0.72	BDL*	BDL*
33	24/07/2019	63.96	31.24	19.56	24.43	0.71	BDL*	BDL*
34	29/07/2019	58.35	36.45	21.30	34.37	0.86	BDL*	BDL*
35	31/07/2019	76.29	41.24	11.54	22.67	0.58	BDL*	BDL*
36	05/08/2019	67.55	40.25	10.50	20.52	0.23	BDL*	BDL*
37	07/08/2019	72.65	45.66	15.20	26.30	0.30	BDL*	BDL*
38	12/08/2019	68.26	31.53	22.37	35.65	0.48	BDL*	BDL*
39	14/08/2019	60.51	27.52	9.26	27.63	0.73	BDL*	BDL*
40	19/08/2019	75.28	38.39	11.51	23.44	0.57	BDL*	BDL*
41	21/08/2019	58.35	26.12	7.22	30.56	0.45	BDL*	BDL*
42	26/08/2019	79.39	42.36	16.23	39.57	0.29	BDL*	BDL*
43	28/08/2019	69.48	32.44	21.59	34.53	0.41	BDL*	BDL*
44	03/09/2019	64.58	36.65	9.15	18.40	0.60	BDL*	BDL*
45	05/09/2019	54.36	25.37	6.71	15.37	0.52	BDL*	BDL*
46	09/09/2019	71.36	33.64	11.72	20.58	0.39	BDL*	BDL*
47	11/09/2019	52.68	20.41	7.70	26.24	0.31	BDL*	BDL*
48	16/09/2019	76.24	42.73	12.61	35.73	0.30	BDL*	BDL*
49	18/09/2019	67.58	41.20	15.73	22.64	0.55	BDL*	BDL*
50	23/09/2019	65.42	29.67	18.63	30.69	0.37	BDL*	BDL*
51	25/09/2019	73.52	31.57	22.48	32.79	0.32	BDL*	BDL*
52	30/09/2019	68.35	35.58	16.59	29.45	0.36	BDL*	BDL*
	TEST METHOD	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)	Gravimetric-CPCB - Method (Vol.I,May-2011)	IS:5182(Part II):Improved West and Gaeke	IS:5182(Part VI):Modified Jacob & Hochheiser (NaOH-NaAsO ₂)	NDIR Digital Gas Analyzer	SOP: HC: GC/GCMS/Gas analyzer	IS 5182 (Part XI):2006/CPCB Method

*Below detection limit

H. T. Shah**Lab Manager****Dr. Arun Bajpai****Lab Manager (Q)**



RESULT OF AMBIENT AIR QUALITY MONITORING

ADANI HOUSE								
Sr. No.	Date of Sampling	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM 2.5) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO2) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO2) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
1	02/04/2019	68.30	31.55	11.54	21.67	0.86	BDL*	BDL*
2	03/04/2019	52.32	26.20	19.64	28.62	0.70	BDL*	BDL*
3	08/04/2019	60.49	37.52	18.55	33.67	0.61	BDL*	BDL*
4	10/04/2019	76.33	22.29	9.67	17.51	0.96	BDL*	BDL*
5	15/04/2019	54.33	29.70	10.28	29.34	0.84	BDL*	BDL*
6	17/04/2019	62.35	35.63	13.63	26.65	0.94	BDL*	BDL*
7	22/04/2019	73.65	32.47	7.70	23.42	0.48	BDL*	BDL*
8	24/04/2019	64.53	36.55	16.42	22.23	0.40	BDL*	BDL*
9	29/04/2019	75.64	30.54	21.64	24.32	0.64	BDL*	BDL*
10	01/05/2019	67.33	39.50	24.38	26.71	0.77	BDL*	BDL*
11	06/05/2019	87.33	25.78	13.27	23.55	1.00	BDL*	BDL*
12	09/05/2019	75.76	40.30	15.65	35.43	0.81	BDL*	BDL*
13	13/05/2019	85.67	46.27	23.43	30.24	0.27	BDL*	BDL*
14	15/05/2019	78.55	35.63	9.71	18.69	0.56	BDL*	BDL*
15	20/05/2019	68.40	42.52	18.57	24.50	0.73	BDL*	BDL*
16	22/05/2019	72.66	29.40	16.37	37.57	0.37	BDL*	BDL*
17	27/05/2019	62.84	31.55	11.78	31.39	0.64	BDL*	BDL*
18	29/05/2019	86.34	36.72	14.57	25.36	0.79	BDL*	BDL*
19	03/06/2019	66.52	31.55	8.56	15.65	0.49	BDL*	BDL*
20	05/06/2019	76.36	39.50	15.25	28.48	0.22	BDL*	BDL*
21	10/06/2019	60.52	36.26	19.42	23.43	0.63	BDL*	BDL*
22	17/06/2019	69.26	30.50	13.57	22.65	0.74	BDL*	BDL*
23	19/06/2019	50.20	25.66	16.25	32.62	0.29	BDL*	BDL*
24	24/06/2019	66.62	34.58	11.30	26.52	0.68	BDL*	BDL*
25	26/06/2019	79.86	32.39	7.59	21.64	0.34	BDL*	BDL*
26	01/07/2019	82.42	41.89	7.60	27.51	0.53	BDL*	BDL*
27	03/07/2019	73.63	26.37	10.68	30.23	0.61	BDL*	BDL*
28	08/07/2019	55.21	29.40	6.54	20.49	0.32	BDL*	BDL*
29	10/07/2019	71.23	37.27	8.63	23.44	0.39	BDL*	BDL*
30	15/07/2019	59.32	27.51	22.43	33.53	0.47	BDL*	BDL*

Continue ...

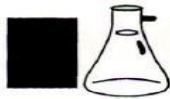
H. T. Shah

Lab Manager



Dr. Arun Bajpai

Lab Manager (Q)

**POLLUCON****LABORATORIES PVT. LTD.**Environmental Auditors, Consultants & Analysts.
Cleaner Production / Waste Minimization Facilitator

Recognised by MoEF, New Delhi Under Sec. 12 of Environmental (Protection) Act-1986

RESULT OF AMBIENT AIR QUALITY MONITORING

ADANI HOUSE								
Sr. No.	Date of Sampling	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM 2.5) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO2) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO2) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
31	17/07/2019	62.47	32.22	18.23	28.51	0.74	BDL*	BDL*
32	22/07/2019	74.38	28.46	13.52	22.41	0.84	BDL*	BDL*
33	24/07/2019	69.45	38.23	20.23	32.47	0.24	BDL*	BDL*
34	29/07/2019	52.42	30.24	17.53	26.67	0.69	BDL*	BDL*
35	31/07/2019	70.66	36.26	21.20	31.41	0.52	BDL*	BDL*
36	05/08/2019	62.51	35.58	19.22	24.51	0.42	BDL*	BDL*
37	07/08/2019	77.50	38.82	21.53	29.53	0.37	BDL*	BDL*
38	12/08/2019	65.35	41.56	11.25	26.59	0.40	BDL*	BDL*
39	14/08/2019	56.20	20.57	13.62	19.34	0.60	BDL*	BDL*
40	19/08/2019	70.69	34.28	18.29	28.55	0.18	BDL*	BDL*
41	21/08/2019	64.23	23.64	9.76	22.60	0.46	BDL*	BDL*
42	26/08/2019	72.41	29.44	7.56	31.53	0.25	BDL*	BDL*
43	28/08/2019	57.31	30.45	16.90	30.22	0.58	BDL*	BDL*
44	03/09/2019	56.22	29.70	17.59	23.41	0.36	BDL*	BDL*
45	05/09/2019	62.39	34.62	14.57	24.43	0.44	BDL*	BDL*
46	09/09/2019	50.42	26.42	16.51	30.35	0.13	BDL*	BDL*
47	11/09/2019	60.54	23.77	12.70	20.26	0.48	BDL*	BDL*
48	16/09/2019	69.35	27.68	7.59	27.57	0.21	BDL*	BDL*
49	18/09/2019	74.62	36.68	20.50	37.64	0.25	BDL*	BDL*
50	23/09/2019	53.69	25.41	15.66	25.44	0.41	BDL*	BDL*
51	25/09/2019	78.32	39.16	10.40	21.61	0.29	BDL*	BDL*
	TEST METHOD	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)	Gravimetric-CPCB - Method (Vol.I,May-2011)	IS:5182(Part II):Improved West and Gaeke	IS:5182(Part VI):Modified Jacob & Hochheiser (NaOH-NaAsO2)	NDIR Digital Gas Analyzer	SOP: HC: GC/GCMS/Gas analyzer	IS 5182 (Part XI):2006/CPCB Method

*Below detection limit

H. T. Shah**Lab Manager****Dr. Arun Bajpai****Lab Manager (Q)**

RESULT OF AMBIENT AIR QUALITY MONITORING

CT-3 DG HOUSE								
Sr.N o.	Date of Sampling	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM 2.5) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO2) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO2) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
1	02/04/2019	64.36	25.41	20.33	29.64	0.78	BDL*	BDL*
2	03/04/2019	77.69	40.31	23.39	33.50	0.92	BDL*	BDL*
3	08/04/2019	80.42	46.18	11.68	37.41	0.37	BDL*	BDL*
4	10/04/2019	71.65	32.48	6.56	20.55	0.89	BDL*	BDL*
5	15/04/2019	60.47	35.30	15.66	34.38	0.41	BDL*	BDL*
6	17/04/2019	81.26	47.22	9.40	23.43	0.72	BDL*	BDL*
7	22/04/2019	65.34	27.52	14.56	26.62	0.65	BDL*	BDL*
8	24/04/2019	87.54	54.37	17.35	30.47	0.49	BDL*	BDL*
9	29/04/2019	68.67	26.57	13.49	19.66	0.87	BDL*	BDL*
10	01/05/2019	88.67	50.24	15.48	21.67	1.01	BDL*	BDL*
11	06/05/2019	70.33	35.67	21.52	30.48	0.88	BDL*	BDL*
12	09/05/2019	86.37	45.31	10.51	25.33	0.48	BDL*	BDL*
13	13/05/2019	74.33	29.42	26.29	37.21	0.63	BDL*	BDL*
14	15/05/2019	63.47	25.66	7.55	22.62	0.76	BDL*	BDL*
15	20/05/2019	87.35	51.23	19.58	32.49	1.02	BDL*	BDL*
16	22/05/2019	78.39	40.18	13.56	40.27	0.58	BDL*	BDL*
17	27/05/2019	67.86	39.44	18.41	36.70	0.36	BDL*	BDL*
18	29/05/2019	75.32	30.33	12.20	29.38	0.94	BDL*	BDL*
19	03/06/2019	55.17	20.32	6.49	19.21	0.61	BDL*	BDL*
20	05/06/2019	63.28	25.37	23.52	32.76	0.52	BDL*	BDL*
21	10/06/2019	78.37	44.32	13.80	17.56	0.80	BDL*	BDL*
22	17/06/2019	74.27	45.40	18.39	27.51	0.84	BDL*	BDL*
23	19/06/2019	68.42	35.79	11.55	35.63	0.48	BDL*	BDL*
24	24/06/2019	72.56	43.53	9.36	22.67	0.38	BDL*	BDL*
25	26/06/2019	90.56	54.37	12.52	25.64	0.77	BDL*	BDL*
26	01/07/2019	88.62	46.35	14.51	30.64	0.78	BDL*	BDL*
27	03/07/2019	78.48	42.33	16.61	33.48	0.30	BDL*	BDL*
28	08/07/2019	62.53	34.26	12.28	38.44	0.54	BDL*	BDL*
29	10/07/2019	81.63	49.41	17.53	26.46	0.82	BDL*	BDL*
30	15/07/2019	70.46	38.28	20.33	20.27	0.66	BDL*	BDL*



H. T. Shah

Lab Manager




Dr. Arun Bajpai

Lab Manager (Q)

RESULT OF AMBIENT AIR QUALITY MONITORING

CT-3 DG HOUSE								
Sr.N o.	Date of Sampling	Particulate Matter (PM ₁₀) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM _{2.5}) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO ₂) $\mu\text{g}/\text{m}^3$	Oxides of Nitrogen (NO ₂) $\mu\text{g}/\text{m}^3$	Carbon Monoxide as CO mg/m^3	Hydrocarbon as CH ₄ mg/m^3	Benzene as C ₆ H ₆ $\mu\text{g}/\text{m}^3$
31	17/07/2019	80.36	43.45	26.50	36.51	0.89	BDL*	BDL*
32	22/07/2019	69.61	30.42	18.63	29.25	0.94	BDL*	BDL*
33	24/07/2019	58.43	24.21	22.39	34.54	0.57	BDL*	BDL*
34	29/07/2019	72.43	45.64	15.64	18.90	0.90	BDL*	BDL*
35	31/07/2019	90.47	52.35	19.65	28.64	0.41	BDL*	BDL*
36	05/08/2019	74.32	37.49	16.24	23.42	0.33	BDL*	BDL*
37	07/08/2019	86.34	55.66	19.51	35.64	0.54	BDL*	BDL*
38	12/08/2019	90.22	45.35	13.55	27.60	0.61	BDL*	BDL*
39	14/08/2019	72.34	41.59	15.36	24.54	0.71	BDL*	BDL*
40	19/08/2019	61.84	46.35	21.46	31.22	0.47	BDL*	BDL*
41	21/08/2019	70.36	39.73	24.53	39.21	0.24	BDL*	BDL*
42	26/08/2019	62.34	31.28	11.46	33.42	0.44	BDL*	BDL*
43	28/08/2019	76.35	34.68	25.33	38.23	0.72	BDL*	BDL*
44	03/09/2019	72.63	33.77	14.71	20.72	0.23	BDL*	BDL*
45	05/09/2019	65.41	37.62	12.72	22.62	0.63	BDL*	BDL*
46	09/09/2019	56.43	41.26	18.74	28.46	0.33	BDL*	BDL*
47	11/09/2019	66.72	29.50	22.62	33.62	0.18	BDL*	BDL*
48	16/09/2019	58.29	32.53	10.52	29.48	0.56	BDL*	BDL*
49	18/09/2019	80.31	50.40	17.54	31.33	0.38	BDL*	BDL*
50	23/09/2019	70.57	34.64	23.51	34.63	0.53	BDL*	BDL*
51	25/09/2019	84.37	47.34	15.46	24.40	0.45	BDL*	BDL*
52	30/09/2019	75.40	40.26	20.55	26.45	0.37	BDL*	BDL*
	TEST METHOD	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)	Gravimetric-CPCB - Method (Vol.I,May-2011)	IS:5182(Part II):Improved West and Gaeke	IS:5182(Part VI):Modified Jacob & Hochheiser (NaOH-NaAsO ₂)	NDIR Digital Gas Analyzer	SOP: HC: GC/GCMS/Gas analyzer	IS 5182 (Part XI):2006/CPCB Method

*Below detection limit



H. T. Shah

Lab Manager




Dr. Arun Bajpai

Lab Manager (Q)

**POLLUCON****LABORATORIES PVT. LTD.**Environmental Auditors, Consultants & Analysts.
Cleaner Production / Waste Minimization Facilitator

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RESULTS OF NOISE LEVEL MONITORING**Result of Noise level monitoring [Day Time]**

SR. NO.	Name of Location	T1 TERMINAL NR.MARINE BUILDING					
		Result [Leq dB(A)]					
	Sampling Date & Time	19/04/2019	06/05/2019	14/06/2019	19/07/2019	16/08/2019	23/09/2019
1	6:00-7:00	64.2	65.2	64.1	68.3	56.3	68.1
2	7:00-8:00	67.1	62.7	68.8	64.4	60.4	62.8
3	8:00-9:00	67.8	73.4	65.1	62.4	59.4	63.4
4	9:00-10:00	66.3	73.1	72.1	68.4	62.6	69.9
5	10:00-11:00	70.3	70.6	71.4	64.4	65.4	72.4
6	11:00-12:00	68.3	71.4	68.9	64.2	68.4	74.1
7	12:00-13:00	63.5	68.4	72.4	68.5	68.9	70.1
8	13:00-14:00	67.3	62.8	68.8	68.4	67.3	66.4
9	14:00-15:00	63.6	63.2	68.2	68.9	65.5	68.4
10	15:00-16:00	65.2	66.4	72.6	72.5	62.3	62.8
11	16:00-17:00	68.4	66.9	70.2	65.3	65.3	65.6
12	17:00-18:00	64.2	69.4	69.2	63.9	64.2	68.8
13	18:00-19:00	67.3	65.8	71.8	66.8	62.3	64.1
14	19:00-20:00	70.2	66.4	74.2	65.4	65.4	63.4
15	20:00-21:00	65.2	63.8	68.1	68.3	61.3	68.9
16	21:00-22:00	64.5	67.6	62.5	64.4	64.4	66.8
Day Time Limit*		75 Leq dB(A)					

Result of Noise level monitoring [Night Time]

SR. NO.	Name of Location	T1 TERMINAL NR.MARINE BUILDING					
		Result [Leq dB(A)]					
	Sampling Date & Time	19/04/2019	06/05/2019	14/06/2019	19/07/2019	16/08/2019	23/09/2019
1	22:00-23:00	68.7	63.8	60.4	63.1	63.4	68.4
2	23:00-00:00	65.1	65.7	58.1	60.4	60.1	65.5
3	00:00-01:00	62.8	64.1	55.1	59.1	62.4	62.4
4	01:00-02:00	68.4	62.8	59.5	65.4	60.4	63.1
5	02:00-03:00	64.9	63.7	60.4	63.1	60.8	61.4
6	03:00-04:00	69.1	63.9	62.1	64.4	59.4	68.4
7	04:00-05:00	65.5	69.8	60.8	64.9	60.3	64.2
8	05:00-06:00	68.2	62.7	62.7	62.8	62.1	63.1
Night Time Limit*		70 Leq dB(A)					

H. T. Shah

Lab Manager



Dr. Arun Bajpai

Lab Manager (Q)

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RESULTS OF NOISE LEVEL MONITORING**Result of Noise level monitoring [Day Time]**

SR. NO.	Name of Location	NEAR FIRE STATION					
		Result [Leq dB(A)]					
	Sampling Date & Time	24/04/2019	17/05/2019	17/06/2019	10/07/2019	14/08/2019	09/09/2019
1	6:00-7:00	68.4	63.7	62.4	68.4	68.3	65.7
2	7:00-8:00	65.0	61.8	64.2	65.1	64.4	68.3
3	8:00-9:00	67.3	65.4	62.8	63.4	62.4	65.2
4	9:00-10:00	63.5	69.4	68.2	65.1	68.4	65.1
5	10:00-11:00	74.2	74.1	65.1	72.1	64.4	73.3
6	11:00-12:00	71.3	72.5	66.1	68.8	64.2	70.3
7	12:00-13:00	69.3	68.4	72.1	65.1	68.5	65.3
8	13:00-14:00	67.1	65.4	70.1	69.8	68.4	70.2
9	14:00-15:00	70.3	61.5	69.1	67.2	68.9	69.3
10	15:00-16:00	65.2	60.4	65.1	65.3	72.5	64.3
11	16:00-17:00	61.3	69.1	68.1	62.1	65.3	67.2
12	17:00-18:00	63.2	62.4	62.4	63.4	63.9	64.0
13	18:00-19:00	65.3	62.9	66.3	65.8	66.8	67.1
14	19:00-20:00	68.2	67.1	63.4	66.9	65.4	62.1
15	20:00-21:00	60.1	62.8	61.4	71.4	68.3	65.2
16	21:00-22:00	65.2	65.1	62.8	72.8	64.4	61.9
Day Time Limit*		75 Leq dB(A)					

Result of Noise level monitoring [Night Time]

SR. NO.	Name of Location	NEAR FIRE STATION					
		Result [Leq dB(A)]					
	Sampling Date & Time	24/04/2019	17/05/2019	17/06/2019	10/07/2019	14/08/2019	09/09/2019
1	22:00-23:00	63.2	64.1	63.4	68.4	65.1	67.4
2	23:00-00:00	59.4	63.4	68.4	65.5	62.4	64.3
3	00:00-01:00	60.3	62.1	65.2	62.4	59.4	58.4
4	01:00-02:00	60.3	60.4	62.7	63.1	61.7	66.3
5	02:00-03:00	65.3	68.4	69.4	60.4	62.1	64.3
6	03:00-04:00	62.3	63.4	65.1	61.8	65.4	62.1
7	04:00-05:00	60.2	65.4	62.8	63.7	66.1	57.2
8	05:00-06:00	62.4	67.1	66.6	62.8	60.4	62.2
Night Time Limit*		70 Leq dB(A)					

H. T. Shah

Lab Manager



Dr. Arun Bajpai

Lab Manager (Q)

RESULTS OF NOISE LEVEL MONITORING

Result of Noise level monitoring [Day Time]

SR. NO.	Name of Location	ADANI HOUSE					
		Result [Leq dB(A)]					
		15/04/2019	03/05/2019	04/06/2019	03/07/2019	05/08/2019	04/09/2019
1	6:00-7:00	60.3	67.2	61.7	65.4	65.4	64.3
2	7:00-8:00	63.4	65.9	67.3	68.1	66.3	68.8
3	8:00-9:00	62.3	68.1	65.2	62.5	66.9	65.7
4	9:00-10:00	67.4	62.4	70.3	73.1	67.4	70.1
5	10:00-11:00	65.6	62.8	73.2	70.5	63.2	72.4
6	11:00-12:00	68.4	61.8	68.3	69.9	62.4	63.4
7	12:00-13:00	70.4	68.4	68.1	66.4	67.4	60.4
8	13:00-14:00	65.3	68.7	62.4	62.1	65.3	67.9
9	14:00-15:00	69.4	68.2	69.3	68.4	62.5	67.5
10	15:00-16:00	69.7	64.1	66.9	63.4	68.4	62.4
11	16:00-17:00	67.3	69.1	70.2	68.1	68.3	70.3
12	17:00-18:00	65.3	73.1	63.2	66.8	68.7	71.9
13	18:00-19:00	63.8	70.4	64.0	63.1	64.3	68.8
14	19:00-20:00	64.3	64.1	61.0	62.9	62.7	62.1
15	20:00-21:00	67.4	62.8	68.0	65.4	65.8	60.1
16	21:00-22:00	63.8	60.8	65.5	66.7	63.6	64.1
Day Time Limit*		75 Leq dB(A)					

Result of Noise level monitoring [Night Time]

SR. NO.	Name of Location	ADANI HOUSE					
		Result [Leq dB(A)]					
		15/04/2019	03/05/2019	04/06/2019	03/07/2019	05/08/2019	04/09/2019
1	22:00-23:00	60.4	65.7	67.3	65.5	60.4	62.4
2	23:00-00:00	65.1	67.1	59.5	62.1	62.4	67.3
3	00:00-01:00	65.4	61.5	63.1	63.4	68.7	64.3
4	01:00-02:00	61.8	60.4	61.0	68.1	60.1	67.4
5	02:00-03:00	63.4	60.3	61.3	62.7	63.1	60.3
6	03:00-04:00	62.4	62.8	63.4	60.1	60.8	62.3
7	04:00-05:00	65.7	64.1	68.3	60.9	61.4	65.3
8	05:00-06:00	67.1	62.9	66.2	63.1	64.1	68.4
Night Time Limit*		70 Leq dB(A)					



H. T. Shah

Lab Manager




Dr. Arun Bajpai

Lab Manager (Q)

RESULTS OF NOISE LEVEL MONITORING

Result of Noise level monitoring [Day Time]

SR. NO.	Name of Location	CT-3 DG HOUSE					
		Result [Leq dB(A)]					
	Sampling Date & Time	29/04/2019	13/05/2019	24/06/2019	26/07/2019	28/08/2019	18/09/2019
1	6:00-7:00	68.9	61.5	65.3	56.3	62.4	61.2
2	7:00-8:00	70.3	59.4	67.2	60.4	64.5	68.7
3	8:00-9:00	65.3	63.4	70.2	59.4	67.3	65.2
4	9:00-10:00	64.3	65.5	66.4	62.6	66.0	64.3
5	10:00-11:00	64.2	62.3	62.6	65.4	69.9	63.8
6	11:00-12:00	62.1	63.8	60.3	68.4	72.4	69.9
7	12:00-13:00	68.3	64.1	65.2	68.9	67.3	62.7
8	13:00-14:00	73.7	62.8	68.3	67.3	70.3	62.3
9	14:00-15:00	69.9	69.2	66.4	65.5	72.3	65.1
10	15:00-16:00	67.3	67.2	61.4	62.3	67.3	65.4
11	16:00-17:00	68.3	66.1	65.2	65.3	63.2	65.3
12	17:00-18:00	65.7	68.4	68.3	64.2	65.7	68.1
13	18:00-19:00	63.8	68.3	66.2	62.3	69.2	64.2
14	19:00-20:00	63.8	62.4	72.6	65.4	64.1	62.8
15	20:00-21:00	64.9	64.3	70.2	61.3	64.2	65.1
16	21:00-22:00	65.8	63.8	69.3	64.4	67.3	63.4
Day Time Limit*		75 Leq dB(A)					

Result of Noise level monitoring [Night Time]

SR. NO.	Name of Location	CT-3 DG HOUSE					
		Result [Leq dB(A)]					
	Sampling Date & Time	29/04/2019	13/05/2019	24/06/2019	26/07/2019	28/08/2019	18/09/2019
1	22:00-23:00	62.1	68.7	61.1	67.5	62.4	60.4
2	23:00-00:00	65.0	65.1	65.1	65.2	61.8	62.4
3	00:00-01:00	58.3	62.8	62.8	63.1	60.4	60.4
4	01:00-02:00	59.4	68.4	63.6	60.4	57.1	65.2
5	02:00-03:00	63.4	64.9	63.9	65.1	59.8	63.1
6	03:00-04:00	67.8	69.1	65.1	62.8	60.4	64.5
7	04:00-05:00	60.4	61.4	60.4	61.2	60.8	68.4
8	05:00-06:00	62.4	68.2	61.8	62.8	62.1	62.1
Night Time Limit*		70 Leq dB(A)					



H. T. Shah

Lab Manager




Dr. Arun Bajpai

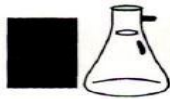
Lab Manager (Q)

**RESULT OF STACK MONITORING**

SR NO	TEST PARAMETERS	UNIT	STD. LIMIT	THERMIC FLUID HEATER (BITUMEN-01)	THERMIC FLUID HEATER (BITUMEN-02)	HOT WATER SYSTEM-1	HOT WATER SYSTEM-2	TEST METHOD
APRIL 2019								
1	Particulate Matter	mg/Nm ³	150	--	--	19.83	--	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	100	--	--	6.74	--	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	50	--	--	39.32	--	IS:11255 (Part-VII):2005
MAY 2019								
1	Particulate Matter	mg/Nm ³	150	--	--	21.81	14.37	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	100	--	--	6.68	5.53	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	50	--	--	34.27	28.75	IS:11255 (Part-VII):2005
JUNE 2019								
1	Particulate Matter	mg/Nm ³	150	--	--	23.74	--	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	100	--	--	5.45	--	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	50	--	--	36.56	--	IS:11255 (Part-VII):2005
JULY 2019								
1	Particulate Matter	mg/Nm ³	150	--	--	--	--	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	100	--	--	--	--	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	50	--	--	--	--	IS:11255 (Part-VII):2005
AUGUST 2019								
1	Particulate Matter	mg/Nm ³	150	12.33	--	20.41	--	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	100	3.62	--	6.98	--	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	50	23.61	--	32.61	--	IS:11255 (Part-VII):2005
SEPTEMBER 2019								
1	Particulate Matter	mg/Nm ³	150	18.75	--	--	--	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	100	4.24	--	--	--	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	50	28.47	--	--	--	IS:11255 (Part-VII):2005

*Below detection limit

Results on 11 % O₂ Correction when Oxygen is greater than 11 %. And 12% CO₂ correction when CO₂ is less than 12%**H. T. Shah****Lab Manager****Dr. Arun Bajpai****Lab Manager (Q)**

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Cleaner Production / Waste Minimization Facilitator

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RESULTS OF D.G. STACK MONITORING**16/05/2019**

SR. NO.	TEST PARAMETERS	Unit	Adani Port	GPCB Limit	Test Method
			D.G. Set – 6, 7 & 8* (1250 KVA, each)		
1	Particulate Matter	mg/Nm ³	17.36	150	IS:11255 (Part-I):1985
2	Sulphur Dioxide	ppm	5.26	100	IS:11255 (Part-II):1985
3	Oxide of Nitrogen	ppm	32.39	50	IS:11255 (Part-VII):2005
4	Carbon Monoxide	mg/m ³	4.9	Not Specified	Digital Gas Analyzer
5	Hydro Carbon NMHC	ppm	BDL*	Not Specified	Gas Chromatography

*DG sets are used as standby, so stack monitoring is done on quarterly basis. Results on 15 % O₂ Correction when Oxygen is greater than 15 %**H. T. Shah****Lab Manager****Dr. Arun Bajpai****Lab Manager (Q)**

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Minimum Detection Limit [MDL]

Ambient Air Parameters		
Sr. No.	Test Parameter	MDL
1	Particulate Matter (PM ₁₀) (µg/m ³)	10
2	Particulate Matter (PM 2.5) (µg/m ³)	10
3	Sulphur Dioxide (SO ₂) (µg/m ³)	5
4	Oxides of Nitrogen (µg/m ³)	5
5	Hydrogen Sulphide as H ₂ S (µg/m ³)	6

Stack Parameters		
Sr.No.	Test Parameter	MDL
1	Particulate Matter (mg/Nm ³)	10
2	Sulphur Dioxide (ppm)	1.52
3	Oxides of Nitrogen (ppm)	2.65
4	Carbon Monoxide (mg/Nm ³)	0.1
5	Haydro Carbon NMHC (ppm)	1.0

Sea Water Parameters			
SR. NO.	TEST PARAMETERS	UNIT	MDL
1	pH	--	2
2	Temperature	°C	2
3	Total Suspended Solids	mg/L	2
4	BOD (3 Days @ 27 °C)	mg/L	1
5	Dissolved Oxygen	mg/L	0.1
6	Salinity	ppt	1
7	Oil & Grease	mg/L	2
8	Nitrate as NO ₃	µmol/L	0.5
9	Nitrite as NO ₂	µmol/L	0.01
10	Ammonical Nitrogen as NH ₃	µmol/L	0.2
11	Phosphates as PO ₄	µmol/L	0.5
12	Petroleum Hydrocarbon	µg/L	1
13	Total Dissolved Solids	mg/L	10
14	COD	mg/L	3
15	Primary productivity	mgC/L/day	0.1
16	Chlorophyll	mg/m ³	0.1
17	Phaeophytin	mg/m ³	0.1
18	Cell Count	No. x 10 ³ /L	1

Sea Sediment Parameters			
SR. NO.	TEST PARAMETERS	UNIT	MDL
1	Organic Matter	%	0.1
2	Phosphorus as P	µg/g	1
3	Petroleum Hydrocarbon	µg/g	1
4	Aluminum as Al	%	0.1
5	Manganese as Mn	µg/g	1
6	Mercury as Hg	µg/g	0.1

H. T. Shah**Lab Manager****Dr. Arun Bajpai****Lab Manager (Q)**



STP Water parameter(mg/L)		
Sr. No.	Test parameter	MDL
1	pH	2
2	Total Suspended Solids (mg/L)	2
3	BOD (3 days @ 270 C) (mg/L)	1
4	Residual Chlorine (mg/L)	0.2
5	Fecal Coliform (MPN INDEX/100 mL)	1.8

ETP Water Parameters			
SR. NO.	TEST PARAMETERS	UNIT	MDL
1	Colour	Co-pt	2
2	pH	--	2
3	Temperature	°C	2
4	Total Suspended Solids	mg/L	2
5	Total Dissolved Solids	mg/L	10
6	COD	mg/L	3
7	BOD (3 Days @ 27 °C)	mg/L	1
8	Chloride as Cl	mg/L	1
9	Oil & Grease	mg/L	2
10	Sulphate as SO ₄	mg/L	1
11	Ammonical Nitrogen as NH ₃	mg/L	0.2
12	Phenolic Compound	mg/L	0.005
13	Copper as Cu	mg/L	0.01
14	Lead as Pb	mg/L	0.01
15	Sulphide as S	mg/L	0.1
16	Cadmium as Cd	mg/L	0.002
17	Fluoride as F	mg/L	0.05

H. T. Shah

Lab Manager



Dr. Arun Bajpai

Lab Manager (Q)



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"HALF YEARLY ENVIRONMENTAL MONITORING REPORT"

FOR



**BORE HOLE WATER
ADANI PORTS AND SPECIAL ECONOMIC ZONE LIMITED
TAL: MUNDRA, KUTCH, MUNDRA – 370 421**

**MONITORING PERIOD:
APRIL 2019 TO SEPTEMBER 2019**

PREPARED BY:



POLLUCON LABORATORIES PVT.LTD.

**PLOT NO.5/6 "POLLUCON HOUSE", OPP. BALAJI INDUSTRIAL SOCIETY,
OLD SHANTINATH SILK MILL LANE, NEAR GAYTRI FARSAN MART,
NAVJIVAN CIRCLE, UDHANA MAGDALLA ROAD, SURAT-395007.
PHONE/FAX – (+91 261) 2455 751, 2601 106, 2601 224.
E-mail: pollucon@gmail.com Web: www.polluconlab.com**

TC - 5945

ISO 9001:2015

ISO 14001:2015

OHSAS 18001:2007



RESULTS OF BORE HOLE WATER

SR. NO	TEST PARAMETERS	UNIT	RESULTS			TEST METHOD
			PUMP HOUSE-1	PUMP HOUSE-2	PUMP HOUSE-3	
	GPS Location		N 22° 44.554' E 069° 41.453'	N 22° 44.554' E 069° 41.453'	N 22° 44.554' E 069° 41.453'	
	Sampling Date		20/06/2019	20/06/2019	20/06/2019	
1	pH	--	7.70	8.10	8.06	IS3025(P11)83Re.02
2	Salinity	ppt	13.2	4.6	7.1	APHA 2520B
3	Oil & Grease	mg/L	BDL*	BDL*	2.0	APHA(22ndEdi)5520D
4	Hydrocarbon	mg/L	BDL*	BDL*	BDL*	GC/GC-MS
5	Lead as Pb	mg/L	0.048	0.056	0.075	AAS APHA(22ndEdi)3111 B
6	Arsenic as As	mg/L	BDL*	BDL*	BDL*	AAS APHA 3114 B
7	Nickel as Ni	mg/L	BDL*	BDL*	BDL*	AAS APHA(22ndEdi)3111 B
8	Total Chromium as Cr	mg/L	BDL*	BDL*	BDL*	AAS 3111B
9	Cadmium as Cd	mg/L	0.011	0.036	0.025	AAS APHA(22ndEdi)3111 B
10	Mercury as Hg	mg/L	BDL*	BDL*	BDL*	AAS APHA- 3112 B
11	Zinc as Zn	mg/L	3.80	2.1	0.48	AAS APHA(22ndEdi)3111 B
12	Copper as Cu	mg/L	BDL*	BDL*	BDL*	AAS APHA(22ndEdi)3111 B
13	Iron as Fe	mg/L	7.2	6.2	3.10	AAS APHA(22ndEdi)3111 B
14	Insecticides/Pesticides	mg/L	Absent	Absent	Absent	GC/GC-MS
15	Depth of Water Level from Ground Level	meter	1.1	1.05	1.0	--

*BDL: Below Detection Limit

H. T. Shah

Lab Manager



Dr. Arun Bajpai

Lab Manager (Q)

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SR. NO	TEST PARAMETERS	UNIT	RESULTS		TEST METHOD
			NEAR ETP OFFICE	NEAR PUMP HOUSE -1	
	GPS Location		N 22° 44.549' E 069° 41.464'	N 22° 44.50' E 069° 41.42'	
	Sampling Date		20/06/2019	20/06/2019	
1	pH	--	7.95	7.95	IS3025(P11)83Re.02
2	Salinity	ppt	19.4	8.60	APHA 2520B
3	Oil & Grease	mg/L	3.1	BDL*	APHA(22ndEdi)5520D
4	Hydrocarbon	mg/L	BDL*	BDL*	GC/GC-MS
5	Lead as Pb	mg/L	0.044	0.062	AAS APHA(22ndEdi)3111 B
6	Arsenic as As	mg/L	BDL*	BDL*	AAS APHA 3114 B
7	Nickel as Ni	mg/L	BDL*	BDL*	AAS APHA(22ndEdi)3111 B
8	Total Chromium as Cr	mg/L	BDL*	BDL*	AAS 3111B
9	Cadmium as Cd	mg/L	BDL*	BDL*	AAS APHA(22ndEdi)3111 B
10	Mercury as Hg	mg/L	BDL*	BDL*	AAS APHA- 3112 B
11	Zinc as Zn	mg/L	0.092	BDL*	AAS APHA(22ndEdi)3111 B
12	Copper as Cu	mg/L	BDL*	BDL*	AAS APHA(22ndEdi)3111 B
13	Iron as Fe	mg/L	0.35	5.1	AAS APHA(22ndEdi)3111 B
14	Insecticides/Pesticides	mg/L	Absent	Absent	GC/GC-MS
15	Depth of Water Level from Ground Level	meter	1.0	1.25	--

*BDL: Below Detection Limit



H. T. Shah

Lab Manager




Dr. Arun Bajpai

Lab Manager (Q)

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Borehole Water Parameters			
SR. NO.	TEST PARAMETERS	UNIT	MDL
1	pH	--	2
2	Salinity	mg/L	0.5
3	Oil & Grease	mg/L	2
4	Hydrocarbon	mg/L	0.01
5	Lead as Pb	mg/L	0.01
6	Arsenic as As	mg/L	0.001
7	Nickel as Ni	mg/L	0.02
8	Total Chromium as Cr	mg/L	0.025
9	Cadmium as Cd	mg/L	0.002
10	Mercury as Hg	mg/L	0.005
11	Zinc as Zn	mg/L	0.06
12	Copper as Cu	mg/L	0.01
13	Iron as Fe	mg/L	0.1
14	Insecticides/Pesticides	mg/L	0.1

H. T. Shah

Lab Manager



Dr. Arun Bajpai

Lab Manager (Q)

Annexure – 3




N R ENTERPRISE

H-804, SHLOK PARISAR, OPP ICB FLORA, BEHIND VODAFONE STUDIO TOWER , NEAR GOTA
BRIDGE , S G HIGHWAY ,AHMEDABAD, Gujarat - 382481
Mo-9428457040

Tax Invoice												ORIGINAL FOR RECEIPT	
Details of Supplier						Invoice No.		NREAPSEZ/A12					
PAN AHZPR0413J State Gujarat						Invoice Date		20.09.2019					
GSTIN 24AHZPR0413J1Z1 State Cod 24													
Details of Receiver						WO No		4800036131					
Adani Ports and Special Economic Zone Limited						WO Date		14-09-2018					
Adani House, PO Box No.1, Village Dhrub						Bill Period		Aug-19					
Mundra - 370 421, Dist. - Kutch													
Gujarat, India													
Contact Details : +91 2838 271181, Fax +91 2838 255460													
E-mail : parinb.mehta@adani.com													
PAN - AAACG7917K													
GSTIN - 24AAACG7917K1ZH													
State Gujarat State Code 24						Place of Supply/Service		Mundra Gujarat					
S.No.	Service Description	SAC Code	UoM	Rate	Quantity	Taxable Value	CGST		SGST		IGST		
							Rate	Amt.	Rate	Amt.	Rate	Amt.	
1	PSP MONITORING AT TLP (Monthly)	998519	Nos	1250.00	10	12500.00	0%	0.00	0%	0.00	18%	2250.00	
2	TR MONITORING AND MAINTENANCE	998519	Nos	12500.00	1	12500.00	0%	0.00	0%	0.00	18%	2250.00	
3	MAINTENANCE OF AJB	998519	Nos	5400.00	1	5400.00	0%	0.00	0%	0.00	18%	972.00	
Sub-Total						30400.00	0.00		0.00		5472.00		
Total Invoice Amount (in Words)													
THIRTY FIVE THOUSAND EIGHT HUNDRED SEVENTY TWO ONLY						Total Taxable Amount						30400.00	
						Total CGST						0.00	
Bank Details						Total SGST						0.00	
ICICI BANK ACCT NO: 058605500280						Total IGST						5472.00	
IFSC CODE: ICIC0000586						Total Invoice Amount (in figures)						35872.00	
BRANCH: 100 FEET RING ROAD AHMEDABAD						Amount of Tax subject to Reverse Charge							
						For N R ENTERPRISE							
						Signature							
						Name of Signatory							
						Designation/Status							

Save Tree

Save Planet

		ADANI Ports And Special Economic Zone Ltd		Doc. No. :- APSEZL/NRAJB/R01																																																																																																																													
		MONITORING OF ANODE GROUND BED and JUNCTION BOX		Page No. :- 1 of 1																																																																																																																													
BASE : ADANI -MUNDRA			PIPELINE SECTION : AMC OF CATHODIC PROTECTION FOR SPM-IOCL PIPELINE																																																																																																																														
NAME OF TR STATION : ADANI TERMINAL-MUNDRA			DATE : 31/08/2019																																																																																																																														
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ADANI Ports And Special Economic Zone Ltd

Mundra -Kutchh

P.S.P. MONITORING REPORT OF ICCP SYSTEM

MAINT. BASE : Mundra

PIPELINE SECTION : AMC OF CATHODIC PROTECTION FOR SPM-IOCL PIPELINE

Date : 31/08/2019

Criteria for PSP as per OISD 226 / 12.3.5 A or NACE SP0169-2013/ 6.2 underprotected level (-0.85 volt); Overprotected level (-1.2 volt) wrt Cu-CuSO4 reference Electrode

SR. No.	TLP No.	TYPE	Location (detail description)	Chainage (km)	PSP (-ve volt)	Casing PSP(-V)	AC V	Un Protected PSP(-V)	Remarks
1	1	E	Nr. Insulating Joint	0.000	1.330		0.016	0.98	
2	2	D	After Railway Crossing	0.425	1.330	0.7	0.016		
3	3	A	field	1.400	1.320		0.015		
4	4	A	field	2.400	1.260		0.01		
5	5	A	field	3.000	1.200		0.005		
6	6	D	Road crossing	3.440	1.180	0.74	0.006		
7	7	A	field	4.300	1.130		0.006		
8	8	A	field	5.2	1.110		0.006		
9	9	A	IOCL Boundary wall	5.900	1.100		0.005		
10	10	E	Inside IOCL	6.200	1.080		0.026	0.98	
B)									
Feeding TRUnit/ CPPSM Locations >>				TP2					
Feed Voltage (DC volt) :				3.9					
Feed Current (DC amp) :				3.00					
AC voltage (50Hz) at input of TRU/CPPSM:				230V					

Graphical Representation (Annexure) : **Included**

Any other observation/ discrepancy :

Pipeline is well protected.

Reviewed by (APSEZL)

Signature :

Name :

Designation :

Monitored by N R ENTERPRISE

Signature :

Name :

Designation :



ADANI Ports And Special Economic Zone Ltd

MUNDRA -KUTCHH



MONITORING & MAINTENANCE OF TRU

Maint Base : Adani Mundra

Date of Monitoring : 31/08/2019

Name of TRU/CPSSM Location : TP 2

Pipelines :AMC OF CATHODIC PROTECTION FOR SPM-IOCL PIPELINE

1 Technical details of the Unit :

Manufacturer : Raychem RPG

Model : Cu,Cu,So4

Type (~~OIL-Cooled~~/ **Natural Air Cooled**):

Year of Manufacture : 2011

S No of Unit:- 11007

Input Voltage (AC / \emptyset E) : 230 V +/- 10 %

Output Rating (Voltage/ Current Range) : 25 V / 25 A

Is unit fitted with built-in Interrupter

NO

2 VISUAL INSPECTION & OBSERVATION :

2.1 Operation of door lock(s) : **OK** / -**OK**

2.2 Earthing of unit : **OK** / ~~NOT-OK~~

2.3 Is door closing properly : **OK**

2.4 any indication of overheating/ burning : **NO**/ ~~YES~~

2.5 Transformer oil level : ~~OK~~ / ~~NOT-OK~~ / **NA**

2.6 Cleaning & Air Blowing : **Done** / ~~Not-Done~~

2.7 Any leak/spillage of OIL observed : **NO**/ ~~YES~~

2.8 Tightening of connections : **Done** / ~~Not-Done~~

2.9 Front panel indications : **OK** / ~~NOT-OK~~

2.1 Interrupter : **NOT Available**

2.11 Condition of Front panel : **OK** / ~~Not-OK~~

2.12 Condition of all Analogue Panel Meters : **OK** / ~~NO~~

2.13 Lightning arrestor at Output : **NOT OK**

2.14 Condition of all Digital Panel Meters : **OK** / ~~NO~~

2.15 Lightning arrestor at Input : **NOT OK**

2.16 Backup power supply condition : Available/**Not available**

3 WORKING PARAMETERS :

Unit	Parameter	Value	UoM	Remarks
TR / CPVCM / CPSSM	3.1 INPUT VOLTAGE (AC / \emptyset E)	246	volt	
	3.2 INPUT CURRENT (AC / \emptyset E)	0.78	amp	
	3.3 OUTPUT VOLTAGE	3.9	volt	
	3.4 OUTPUT CURRENT	3	amp	
	3.5 MODE of Operation	AUTO		
	3.6 Feed Voltage (-V) (Internal)	1.12	volt	
	3.8 Drain PSP (-ve Volt)	1.17	volt	
	3.9 PSP VALUE W.R.T. REF - 1 (-ve volt)	1.120	volt	
	REF - 2 (-ve volt)	1.170	volt	
	REF - 3 (-ve volt)	NA	volt	
	4.0 Circuit Resistance (V/I)	1.300		
4	Any other observation/ discrepancy	1)TR unit working ok		

Reviewed by(APSEZL)

Monitored by (N R ENTERPRISE)

Signature :

Signature :

Name :

Name :

Designation :

Designation :



Annexure – 4

Adani

Foundation

Education
Community
Health
Kutch
CSR
Community
Infrastructure
Development
Sustainable Livelihood
Development

Sustainable Growth
With Goodness



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Utthan - Education

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Employee
Volunteering
Programme

Adani Skill
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Our
Change makers

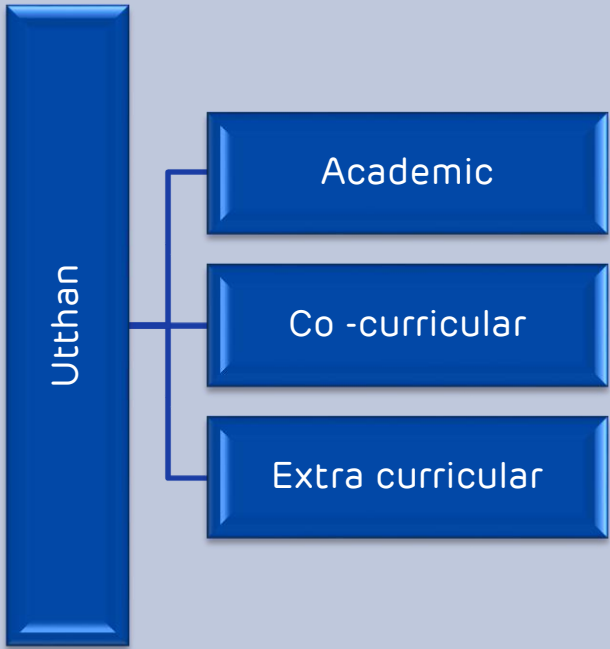
Suposhan

30

52

Awards and
Accolades

Project: Utthan



Majority of Indians are the products of Government schools. These schools are a linchpin of the Indian educational system, accounting for 70% of Pre-Primary and Primary Schools and Secondary Schools. They have a great penetration into the very interiors of our country. We find them in hilly areas, unreachable islands, tribal areas and everywhere.

For the academic year 2018-19, Adani Foundation leveraging their experience, to intervene in Government Schools. These interventions will aim to enhance the quality of primary education in Government schools and result in around 3000 of children benefiting from a meaningful education. 17 Primary Government schools of Mundra taluka of Kutch district have been adopted to take up various initiatives aimed at improving quality in these schools. The project titled is 'UTTHAN'. In this holistic educational project we are focusing on:



Academic

- One teacher – One school + Sports teacher + IT teacher
- 'IT on Wheel' Van with 35 laptops and computer instructor make students more tech savvy and spreading the digital and technology knowledge amongst the younger generation
- To achieve academic excellence of Priya Vidyarthi, Utthan Shikshak implies various alternative method to make their classroom more friendly and interesting.
- English is to be taught to the students from the early classes so that they will be equipped with ample resources during their further studies.
- Training cum Induction Program on various topic like teaching methodology of progressive learner, assessment pattern of slow learner, multiple intelligence etc.



Co - Curricular

- Every Saturday Library activity with the Book issue were planned and executed in a meaningful manner
- Sports are a crucial part of a student's growth and development. Through participation in sports and games, a student gains various skills, experience and confidence. With the intervene of our Sports teacher in all Utthan Schools successfully enrolled 500+ students in Khel Mahakumbh



Extra - Curricular

- Utthan Sahayak + 1222 students from High school & Higher secondary of 6 villages celebrate Fifth International Yoga Day
- On International Plastic Bag Free Day, Awareness were spread through Effective speech, Soft board decoration, Video and Newspaper clipping in all Utthan school.
- Celebration of Gurupurnima in all Utthan Schools during morning special.
- 363 students from 17 schools got an opportunity to visit Adani West port. Main port , Willmar, power & power through project Udaan.
- Tree plantation in all the Utthan School. Adani Foundation align with the circular passed by the Government of Gujarat "Ek baal Ek Jhhad" distributed 100 trees in each school. Students not only planted the trees in fact they adopt each tree with giving their own names.



Adani Vidya Mandir Bhadreshwar



provide "cost-free" education to meritorious students coming from challenging economic background, who have priceless treasures but have been under achievers due to situation. In year 2019-20 450 students are studying.

Activities Covered

- Science Fair – Block level
- Drawing Competition under the P.C.R.A. National level competition
- Assembly on every Saturday.
- International Yoga Day Celebration
- Guru Purnima celebration
- Independence Day Celebration
- Teacher's day Celebration
- Children's Day Celebration
- Educational Tour for each standard
- Festival Celebration
- Awareness Street Play organized at various villages



92% - Result SSC Board Exam

Shala Pravastosav of Std.-1 Students



Parents Teachers Meeting



Healthy Food



Festival Celebration

Various Competitions





With a vision to familiarize, educate and inspire the future generations, Adani Foundation organizes Education Exposure visits to Mundra for High schools and educational institutes in Various parts of Gujrat.

250 institutes and 15,329 beneficiaries have made inspirational visit during this six months



Community Health

Health is the basic need for development of community. Adani Foundation focuses on ensuring good health for better contribution to growth and progress and improving access to quality healthcare service in remote area.

Rural Clinic & Mobile healthcare unit



11 Rural Clinic

8 from mundra 3 from Anjar block treated ;
10889 patients.

31 villages covered through Mobile healthcare unit
7902 patients benefited during six month



19 General Health Camp conducted -
12 General & 7 under Utthan project ;
2873 patients treated



Community Health



206 Dialysis patients

498 Needy patient benefited through Medical support Total amount of support is **Rs.4,02,201/-**



Sr. Citizen project
8672 Card holders of 68 villages get benefit under this project .
4713 sr. citizen patients benefited during six month
30000 limit for three year per patients



Gujarat Adani Institute of Medical Science (GAIMS) - Bhuj

First Medical College of Kutch district based on PPP model. It started from 2009.

Affiliate with "Krantiguru Shyamji Krishna Verma Kutch University"

750 bed – Largest Multi Specialty Hospital in kutch

Adani Foundation Team has initiated coordination with GKGH hospital and established a reception area for the smooth patient coordination and preparation for the social networking Programme.



Health - Bhuj

3075 Beneficiaries of 27 General Health camps.

2629 Golden card enrolled in 18 Health camps in Interior villages & Mahiti Setu as well.

322 death bodies Reached at various locations of Kutchh with dignity and respect.

258 Poor patient supported in GKGH(Rs.2,84,321/-)

4242 People helped through Mahiti Setu for various government schemes

37450 Patinets benefitted though 11 camps towards Mata Madh



Celebration of various days like - World No tobacco day, Kargil Vijay divas, Health week on independence day, 5 years completion ceremony of GKGH, Teachers day,



Awareness
for Health &
hygiene



Mahiti
setu



Support
Poor patient



General
Health camps



Arogya Saptah (7th – 14th August 2019)



Adani foundation, Adani Hospital and GAIMS have Jointly Celebrated "Arogya Saptah" 8th to 14th August-2019 in Respect of 73th Independence of our country. Celebration included multi specialty camps, Workshops, truckers health check up, surgical camp on foundation day and adolescent fair at different part of district. Collector, DDO, Minister, MLA and other dignitaries from NGOs had remained present. Objective of the program was to avail health benefits at GKGH and also at Adani Hospital Mundra and Approximately 4500 people will be direct beneficiaries of the program.

Day	Date	Event Name	Beneficiaries
1	07/08/2019	Health check up at Orphan age, Bhuj	101
2	08/08/2019	Blood Donation Camp, Nakhatrana	55
3	09/08/2019	Pregnant Women health check up, Madhapar	50
4	10/08/2019	Surgical Mega Camp, Khavda	223
5	11/08/2019	General Health Camp, Palara Jail	139
6	12/08/2019	Ayushman Health Card Enrolment, Gorevali	52
7	13/08/2019	Awareness on women health, mukt jivan college, Bhuj	250
8	14/08/2019	Blood Donor Appreciation	36



Fisherman Education

To strengthen the standard of pre-primary education, Adani Foundation has constructed 4 BALWADI at different fishermen helmet Which focuses on the development of basic age-appropriate learning concepts, discipline, regularity, awareness of health & hygiene, cleanliness and also provides nutritious food.

125 children are benefiting from this scheme



115 students are getting benefit of vehicle transportation support from different Bandar.

Vidya Sahay Yojana

100% girls 80% boys

providing **scholarship support** to motivate and encourage fishermen boys and girls for higher education

Book support : 49 Fisherman Students of Higher Secondary Standard (9 to 12) has been benefitted



SLD Fisherman



65 Teams

13 villages

750 Fisherman youth`

"Adani Premiere League"

Cricket Tournament organized among fishermen community to promote healthy sportsmanship ,and harmonically transparent community relationship

Awareness Program

Facilitation of Government Fishermen Welfare

Vessel Approach Related Message Intimation to Fishermen.



4 Fishermen VAsahat

983 Families

70000 ltr water per day`

potable water provided to the fishermen communities at different vasaht through water tanker



Sea Weed Culture

Sea Weed Culture is going on. Seed bank preparation is going on under guidance of VRTI.



4300 Man-days

Mangrove plantation at Hamira mora site .

Bio diversity Project:-

Project started with two spices of mangroves which has good survival rate & Plantation at site – 70 % Survival
Total 4 Hector Plantation.



- The organization has carried out remarkable activities in the agricultural and animal husbandry sectors. We have initiated Programme for Awareness of Farmers in collaboration with KVK. The outreach is approximate 200 farmers of 7 villages
- The purpose of this project is to initiate village wise integrated agricultural & allied development for sustaining agriculture and socio economic situation of farming community of Mundra block.



Sustainable Livelihood Development

After periodic discussions with Village Development Committee, Gram Panchayat and Gau Seva Samiti of Siracha – Adani Foundation had coordinated for Village Gauchar Development. Total 85 Acre Gauchar Land was approved by GP for Development by decision taken in Gram sabha . Among them 22 Acre land Has been Sowed with Sorghum and Remaining land would be Grow with Wild Grass

Siracha

22 Acre – 88000Kg Sorghum

63 Acre- 63000Kg Wild Grass

Total 85 Acre= 151000KG

Bhadreshwar @ 7 Acre= 28000Kg

Kukadsar @ 15 Acre= 60000Kg

UTTHAN MODEL VILLAGE DEVELOPMENT PROJECT



Implementation Process includes

- Meeting with Village Development Committee
- Meeting with SDM for Gauchar Land Details



Sustainable Livelihood Development

With the Objective of to Preserve the rain Water to reduce the Impact of salinity and Recharge the Ground Water (the Main Source of water) to facilitate the Agricultural activities as well as For Drinking water.

Under **UTHHAN MODEL VILLAGE PROJECT**. Salinity ingress issue is well taken with Pond Deepening, Recharge Borewell technique and Roof Top Rain Water Harvesting.

RRWHS: 54

Bore Recharge - 75

Well Recharge- 31

Pond Deepning- 2

Total Ground Water Recharge

- 1878140 cum



Tissue Culture

UTTHAN MODEL VILLAGE DEVELOPMENT PROJECT



Date is the Amrut Fal of Kutchh and Mainly best quality available in some villages in Mundra Taluka. To maintain quality uniformity Adani Foundation is planning for cultivate 4000 tissue cultured plants of elite varieties to the farmers of project area.

Registration is in progress for Farmer's Producer Company with NABARD – 220 Farmers had registered for the same.



WOMEN EMPOWERMENT

An initiative under the Sustainable Livelihoods Development Program to encourage women, take control of their own lives and increase their confidence whether they are single, married or widowed.

**Aaarambh SHG "Suf"
Handicraft Cluster
Seven Women from
Pragpar village are
doing embroidery
and one women from
Mundra is looking
after design part.**



Total Sale more than **Rs.3.50** Lacs and
women are getting approximately
Rs.8500 per month.

Women Empowerment

Tejashvi Saheli

3100 School bags for the Students 300 wall hanging for the project of Swachhagraha and 170 Uniform Pair to the Students of Balwadi.



24 Nos of Women got employment

6 women got Job in Britannia Company (Rs.7500/- per month), 9 women got bank sakhi Yojana, 9 women working in various field in SEZ and other companies



Water Conservation Works



- Pond deepening work in Baroi, Luni & Zarpara villages
- Mota Bhadiya Check Dam desilting work
- Lakhpat Godhatal dam desilting work
- Mota Bhadiya artificial bore well recharge - 2 no's



Protection Compound wall at Navinal Village



Garden Development Hanuman Temple - Baroi



Fixing of street light

30 LED Street light Bhopawandh
20 LED Street light Mundra
50 LED Street Light at Bhorara



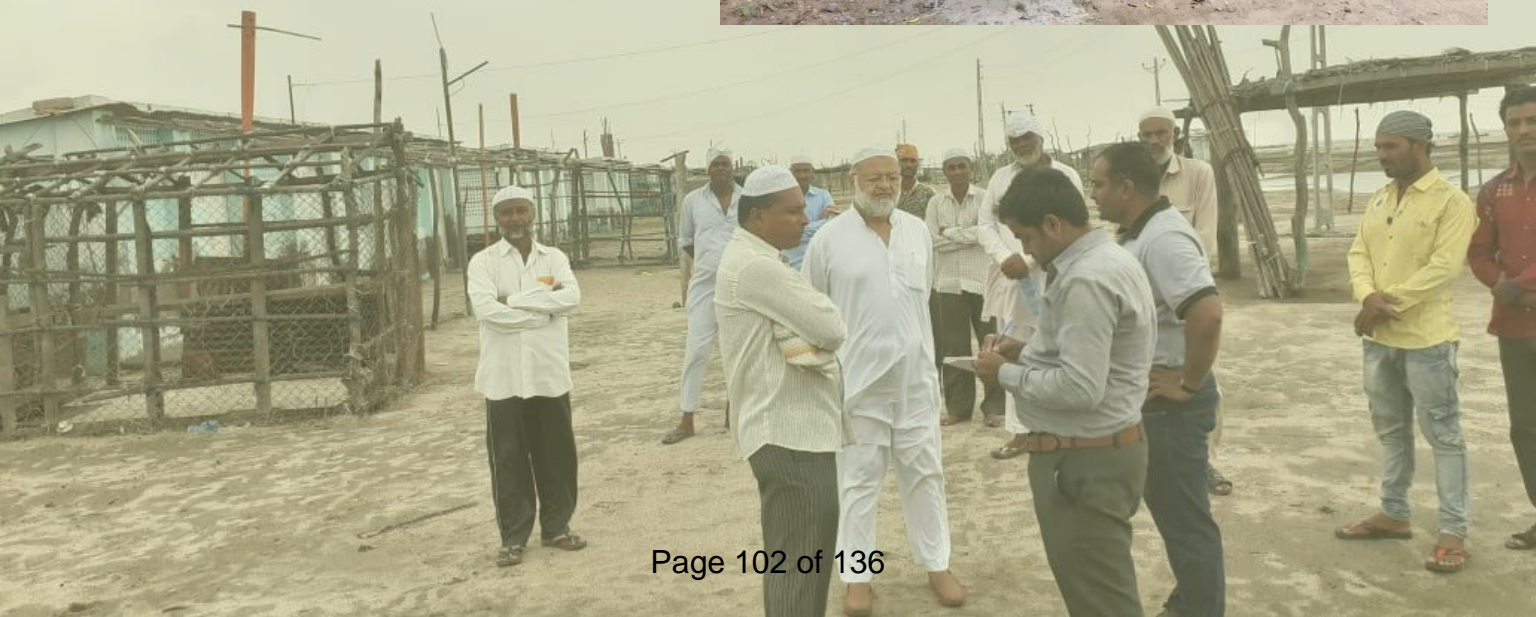
Community Infrastructure Development

- Construction of Prayer Shed at AVMB
- Garden Development work at- Bhujpur Village.
- Construction of R.O. Plant Room at Primary School sadau Village
- Drainage maintenance.
- Renovation of ITI at Mundra work in Progress.



Work In progress

- Renovation of Bavadi at Bavadi Bandar
- Development of Community Training Hall at Mundra & Goyarsama
- Fisherman Room at Navinal & Zarpara Vasahat



Adani Skill Development Centre

Adani Skill Development Centre is providing various employment-oriented trainings to the young for become self-reliant, responsible and active citizen.

ASDC is tied up with Pradhan Mantri Kaushalya Vardhan Yojana and Deen Dayal Upadhyaya Grameen Kaushalya Yojana.



Total No of trainee 643

Total No of batch. 33

Digital Literacy 345

Beauty Therapist 100

Self Employed Tailor 22

Junior Operator Crane 60

Excel training 11

RTG Crane Operator 24

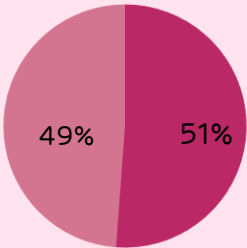
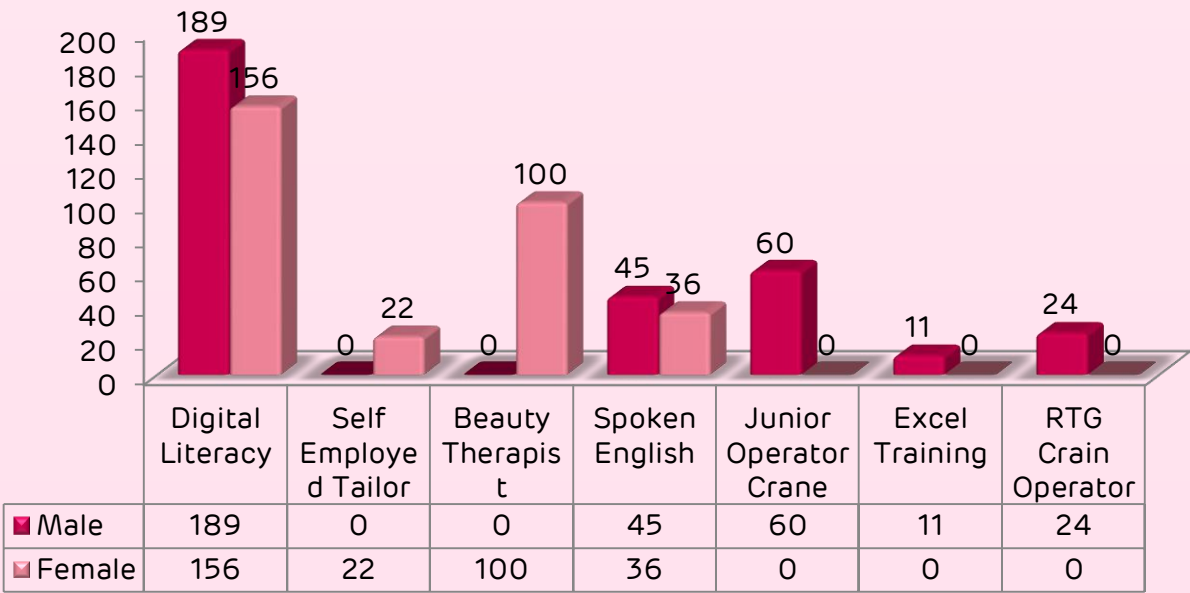


Adani Skill Development Centre



- 42 candidates passed out of 43 people of PMKVY Junior Operator Crane training.
- 21 candidates working in various company with 8000-15000 PM.
- 26 students got job in various company
- 48 women self employed.
- Spoken English class.
- Mobilization activities for SC batch in various village and collage

Completed & Running batch (April to September 2019)



Adani Skill Development Centre

Recognition of Prior Learning (RPL)



RPL recognizes the value of learning acquired a formal setting and provides a government certificate for an individuals skill.

Candidates received an accidental insurance coverage for three years at free of cost.

Certified 27 assessor, 19 Trainer and 08 Assessor.

Started first loader-Unloader job role in Port.

Total Candidates registration 550

ASDC Mundra team received award for Best Center - Unique Initiatives



Another milestone reached on 12th Sep 2019, ASDC launched its program for schedule caste in the state of Gujarat. This program will train candidates in various vocational training educational course like Self employed tailor and Beauty & Wellness. Total 135 women/Girls participated in this training. This course is sponsored by Department of Social justice and Empowerment .



Adani Skill Development Centre

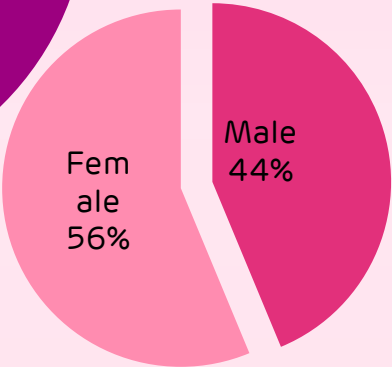


Skill Development Training Program for Schedule Cast Beneficiaries

1440 SC beneficiaries from Eight Taluka of Kutchh.

- Hand embroidery
- Self employed stitching
- Mobile Repairing
- Beauty parlor
- Crane operator

Inauguration in presence of Mr Vinod Chavda (MP, Kutchh and Morabi) Mrs Lata Solanki (Pramukh, Nagar Palika,Bhuj) Mr Rohit (District Social Justice and Empowerment), Mr Jatin Trivedi (Head, ASDC)and Mr solanki (Chairman, social justice committee Kutchh) we're present



460 Training Completed at Centre

441 Training completed outreach

Sr No	Job Role (Write Full Name of Job Role)	Female	Male	Total
1	General Duty Assistant	86	38	124
2	Digital Literacy	239	313	552
3	Spoken English	113	40	153
4	Beauty Therapist	38	0	38
5	Tally erp.9	31	3	34
Total		507	394	901



Suposhan



The objective of the Project is to reduce occurrence of malnutrition and anemia.

create awareness about malnutrition and anaemia and related factors amongst all stakeholders and role they may play in curbing the issue.

To successful implementation of the project, “Sangini – Village Health Volunteer” plays major role in the Project.

Community Engagement and other Activities

1	No of Sangini	25
2	Total Village Cover	45
3	Total Anganwadi Cover	76
4	SAM to MAM Monitoring Progress	9
5	MAM to Normal Monitoring Progress	20
6	Focus Group Discussion	1111
7	Family Based Counselling	310
8	Village level Events	57
9	Formation of women's groups	15
10	Formation of adolescent's Groups	14
11	No of SAM children referred to CMTC	15
12	No of SAM children provided with EDF	10
13	Total HB screening - RPA	1086
14	Total HB screening - Adolescent girls	1161
15	Total Anthropometric screening	6268
16	Total Family Cover	9038
17	“NATIONAL NUTRITION month Celebration”	1551
18	“WORLD BREASTFEEDING WEEK”celebration	500
19	SuPoshan Melawa	140
20	World menstrual Hygiene Day celebration	220



Swachhagraha



Adani Foundation has launched project "Swachhagraha" Swachhata ka Satyagraha in the year 2015, to support the 'Swachh Bharat Abhiyan'. Falling in line with our Honorable Prime Minister's call for a Clean India, we launched this mass movement towards making our Nation litter free.



Swachhagraha at Kutchh

4 City / town

266 Schools

266 Prerak trained

5000+ Dal members

Swachhagraha



Swachhagraha Wall



Toilet Etiquettes

Safai Ke Sitare



Personal Hygiene



Large Scale community events



Swachhagraha Oath



Activities of Swachhagraha



Adani Kandla Bulk Terminal Port Limited is joint venture of Adani Ports and SEZ Limited as well as Kandla Port. We are going to implement drainage pipeline for Tuna and Wandi with participation of Kandla Port in current year. Survey is done and work will be started soon..



- In Rampar and Tuna Village We are providing Fodder in summer season. Also guiding farmers for modern farming techniques for Organic Farming and sustainable Agriculture
- Praveshotsav Kit is distributed in 8 schools covering 180 Students in Tuna and Surrounding seven villages.. Our efforts were appreciated by community.
- Adani Foundation is bridging the gap between Government Schemes and Beneficiaries. In this Six Months we could able to support 5 widows and 4 differently abled to avail benefits of Government. Tree Plantation and 4 health camp was organized in Tuna and Rampar Village.



CSR Nakhatrana

As a Part of Integrated Development of any Rural area – Education is the most powerful weapon. Keeping in mind, Utthan Education Project will be start after November at 8 Schools of Nakhatrana.

During Primary Information collection, we received warm welcome from Principals and Government Officials. .

Adani Foundation has initiated UTTHAN programme in Government schools. The programme converges the four pillars of education seamlessly: Students, Teachers, Guardians and Infrastructure.

The Project Relates to Adani Green energy Limited – Mainly Windmills project. First phase is completed.

Adani Foundation is also planning to implement Uthhan Model Village Concept and Bio Diversity – Peacock Conservation will be planned in next Budget.

From Current year We are implementing UTHHAN EDUCATION PROJECT in Eight Schools of Nakhatrana



CSR Lakhpatt

Successfully
completion of
Public Hearing
without any
hindrances

Most of the population of Lakhpatt Depends upon Livestock for their livelihood. Fodder is the prime requirement of them. Adani Foundation had distributed Jovar seeds after considerable rain to 260 Farmers to motivate them for sustainable Livestock development.

SLD Projects

Total 260 Acre = 2000000Kg

Kapurashi @ 130 Acre= 520000Kg

Koriyavi @ 105Acre=480000Kg

Maundhvaiky @25 Acre= 100000Kg

Education Support

Music Kit – 4

Sports Kit - 4

Carpet – 4

Provided to Govt. Schools of
Kapurashi, Koriyani and Mundhvay

Linkages with Govt. Scheme

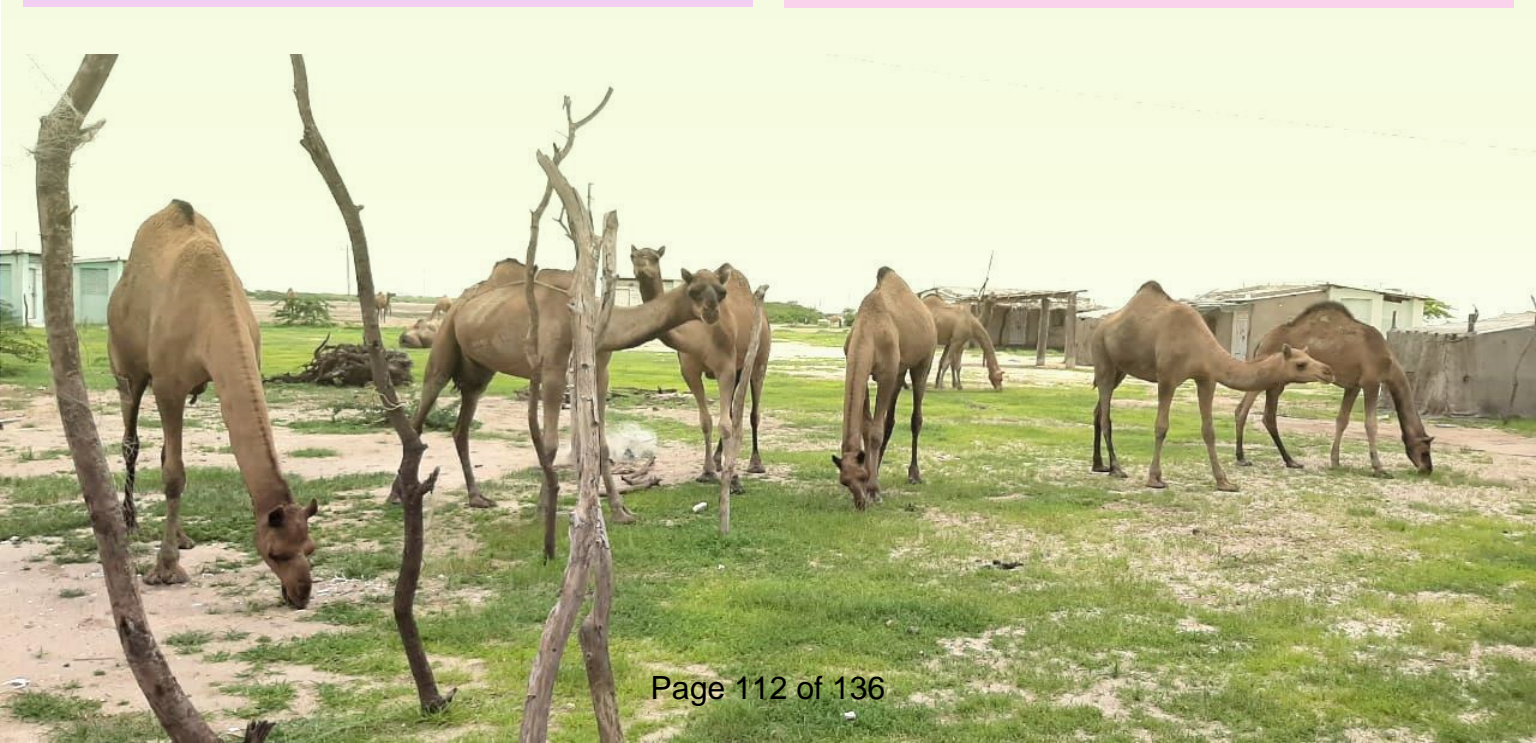
Wheelchair support – 2

Tri cycle support - 3

Divyang Form – 2

Health

Every Friday Specialist Doctor
from GKGH are regularly serving
at CHC Dayapar. More than 250
beneficiaries per month



CSR Bitta

Under Adani Solar Limited – 40 MW Solar Panel Power Unit is Situated at Bitta Village in Abdasa Taluka. We are providing Fodder Support and Health Camp Facilities at Bitta. Our Suposhan Project is running successfully at Bitta.. .

Adani Foundation has taken Eco Friendly initiative for whole village. Village street lights, School and GP is provided Solar Panel to save electricity. The unit was conceptualized and implemented by Solar Team.

Under “Sujlam Suflam Jal Abhiyan” Two Pond Deepening was carried out and got appreciation letter from District Magistrate.

As Abdasa is water scared region and very less rain in past years , as per humble request of villagers Adani Foundation has provided 1,13,750 Kg Fodder to Bitta, Dhrufi and Moti Dhrufi village.

Praveshotsav Kit is distributed in 8 schools covering 47 Students in Bitta and Surrounding seven villages.. Our efforts were appreciated by community.



Employee volunteering

- Medical Camp – **23**
- Senior Citizen Home – **17**
- Blood Donation Camp – **1174**
- Plastic Free campaign – **251**
- Bio Diversity – **4**
- Joy of Giving – **13**
- Yoga Day - **538**
- Total – **2020**



Adani Group is deeply involved in all round social and economic development of the areas in and around Mundra. Adani EVP is context driven and employees have taken part in teaching, Medical Camps, giving impetus to national Swachhata Mission and blood donation. The journey continues





Suf Handicraft : Conserving "VIRASAT" of Decades

Parvati Ben's earliest memory of stitching delicate handicrafts is from when she was as little as 5-years-old. Since then, she has followed this art with an immense dedication that shows through her intricate and precise handiwork.

Parvati is a resident of Pragpar-2 village. She lives in a house with 5 other people and is the sole breadwinner. Even so, Parvati is a humble, loving and welcoming individual.

Parvati Ben had been practising her intricate Suf handicraft all along, making scarves, table cloths, garments and more for her fellow villagers and the occasional visitors. Her artwork had consistently been worth more than what she sold it for- her only desire being that her art finds an expression, a space in the world, however small it may be.

One day, Adani Foundation discovered this diligent, rigorous woman. Parvati Ben now works on projects brought to her by Adani Foundation and is hence able to sustain her entire family on her own. She has risen to be an aspirational figure, looked upon as a role model by her fellow village women. Parvati Ben is playing a major role in now setting up a federation for the village women across Mundra district to practise their handicraft work and earn a livelihood.

But more than all the titles and positions, what Parvati Ben deems sacred is the sheer recognition of her art. All she ever wanted was to be known as an artist and now she is the voice of this very own art, inspiring dozens of women like her to become independent.



Healthy children become happy children

Under the initiative of Balwadi at Vasahat (doorstep Early age Education for less Fisher folk), special awareness camps are organized for kids in school in order to imbibe health seeking behavior in the next generation. Various awareness activities based on healthy living are taught to them such as hand-washing steps and healthy eating habits so that they actively participate in adopting methods for personal hygiene in their daily routine.

Yamina is one of the student of Balwadi. She is five years old. Earlier she used to come to Balwadi without taking bath or hair combing. But after regular awareness camps for mother and students now she is coming well dressed and clean – due to maintaining personnel hygiene she remains healthy too..



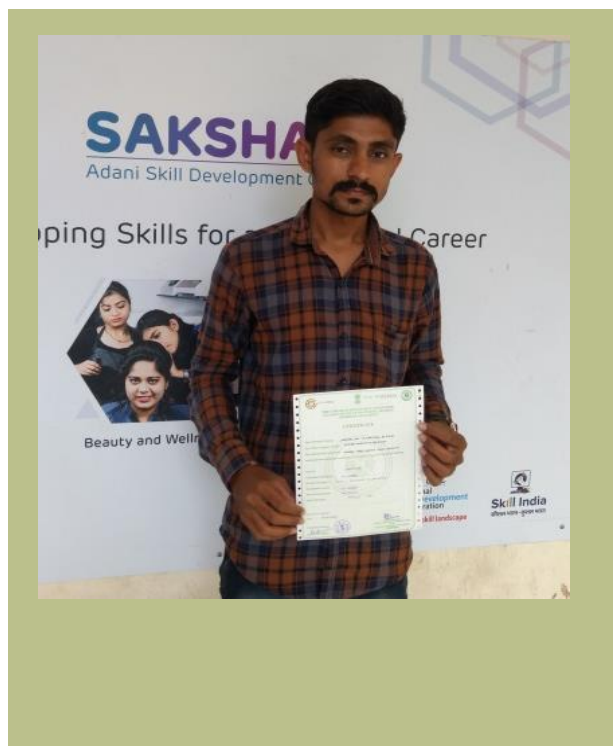
Every Dark Cloud has Silver Lining

Ms. Ramila Maheswari belongs to village Dhruv. Her father's occupation is farming. She has completed graduation and was searching job but lacking in computer operation skill.

Ramila says one of my friends suggested me to join digital literacy training at Adani Skill Development Centre, Mundra. I visited the center with my friend and joined class. I sincerely attended all classes of the course and learnt basics of computer operation viz; Typing, Paint, MS Office (word, Excel, power point), shortcut Keys and using internet for web browsing like; Gmail, Paytm, amazon, net banking etc.

She is saying with smiling on face that

"Today, I am working with firm "YASH ENTERPRISE" in Nana Kapaya, Mundra as a customer care executive and earning Rs. 7000 per month. I am really thankful to Adani Skill development Center to make 'SAKSHAM'.



Pathways towards bright future !!

Kripalsinh Jadeja comes from Hatadi, Mundra with a family of 5 people, four elder brothers and parents. His father is a farmer and mother help him in farming. The brother is working as truck driver. The economic condition of the family was very poor.

Kripalsinh has completed 12th and was searching job. The team of ASDC Mundra had mobilized in the area where he stays and through which he got to know that Adani Skill Development Centre (ASDC) is providing training for checker-cum-RTG crane operator and this was his dream job.

He performed well during the training and understood how this training would help him to grow in future in the field he desires. He was regular to the classes and always eager to know the process well and he performed well during all the activities.

Kripalsinh says he gained back his confidence after starting the training and was motivated by the trainer to participate in all activities and grab any opportunity where he can showcase his skills.

He says that he got more support by getting additional training of soft skills, public speaking, professional manners and facing interviews with confidence.

While undergoing the ASDC training Kripalsinh never imagined that this additional knowledge and skill up gradation would bring him a bright future.



My Emotional Support

Adani Foundations' Senior Citizen Health Card is like a cure to our emotional, physical and psychological problem; in the times when we are completely lonely and handicap at age."....Says both of them while weeping.

Every human being has specific periods of the life wherein the childhood is for fun and the adulthood is spent for the family; remains old age to take care of health

Adani Foundation is holded hands of the senior citizens of Mundra Rajendrasinh and his wife stay alone. Their son and daughters stay separately. They earn their living by grazing cattle. he is having severe arthritis and respiratory disorder. The source of income is very meager and that to dependent on rain. He had to borrow money from family friends or at times take on interest for taking basic treatment. His wife Shantaba also has blood sugar and hence she also requires medical assistance at times. The couple took Adani Foundations' Senior Citizen Health Card in 2015 by which they are able to save good amount, which was their medical expense every month



**Can any other
relationship be as
beautiful?"**

When you grow old, loneliness is sometimes more painful than physical sickness. During routine visits of Dr Mukesh Parmar – Medical Officer of Medical Mobile Unit in the community as a health volunteer, he met Rahomat Ba (grandmother in Gujrati) who initially appeared as an introvert. She lives in Gundala Village. According to her neighbors, she confined herself within the four walls after her husband's demise. Despite living with her children, she is often seen sitting alone in the corridor of her house, as the family members are apparently busy with their own lives. Financially strained, she refrained from visiting a doctor due to fear of their exorbitant fee.

Mukesh bhai was determined to not only get her to our mobile hospital, but also cultivate a health seeking behavior in her. He would keep on standing outside her house till the time she didn't agree to listen to my request. Do you know something? Ba is his best friend today. They not only share our secrets with each other, but also counsel each other as a mother and a son. Can any other relationship be as beautiful?"



Good Human Beings are Gods Incarnate

While many people talk about water crisis and drought in Kutchh, Rambhai Gadhavi of Zarpara has practically found and tried a solution to it and that is water conservation. Born into a poor farmer's family, he faced water problems in childhood and used to wake up at wee hours to fetch water, which inspired him to find ways of water conservation. Under Guidance and Support of Adani Foundation He practiced non-irrigation agricultural methods as solutions to water crisis which causes drought, thereby leading to Indian farmer suicides every year.

He did Bore well recharge and Farm Bunding to increase capacity of ground water through rain and to prevent run off. Not only that, he gave guidance to other farmers to accept water conservation practices.

Rambhai and his wife Veerbai's enthusiasm is remarkable in micro irrigation, fodder cultivation and Recharge activities. They are real change makers of "Sustainable Agriculture Projects" of Adani Foundation

Every drop that matters!



Kutchh district is a dry temperate zone and rainfall is negligible. Water requirement is met through the reservoirs in which the water decreases during summer months when crop is standing in the field. Whatever irrigation was provided resulted in soil erosion leading to loss of huge quantity of soil every year thereby increasing the farmer's problem in producing good quality crop. Therefore, usage of water and land is to be done sensibly by the farmer. Muljibhai The farmer of Navinal Village attended awareness programme of micro irrigation and organic farming organized by the Adani Foundation and showed interest in adopting the same. He was given every suitable help in subsidy and was persuaded into adopting drip irrigation for field crops.

Not only this, with support of DRDA and Adani Foundation he had adopted Bio gas which is utilized for cooking and organic fertilizer as well.

With the help of drip system, the Muljibhai was able to diversify towards different Horticulture crops like Pomegranate, Jamfal, chikoo etc. in addition to traditionally grown crops like Cotton and Caster.

As a result, he is able to get 40-45% higher yield as compared to flood irrigated crops. Diversification has helped in improving returns from the same area.



Giving Back to the Society

Sharad Sharma is Plant head of Adani Wilmar Limited since six years. During Review meetings he came to know about activities of Adani Foundation. He asked Adani Foundation to start health camps near Wilmar Workforce settlements.

Before three years, when Adani Foundation organized first health camp under dignity of workforce – he came during inauguration. He discussed various issues of workforce during camp and being generous and sensitive – he took a decision to do some concrete work for the workforce.

He started visit of labour vasahat once in a month for interacting with them regarding various issues i.e. deaddiction, sanitation, health issues and education of children. Due to his support, We could able to start “Joy of Giving Week” twice in a year.

Not only this, his wife has also extended great support for Education and Joy of giving Week. In spite of being always occupied Sharad ji is volunteering as a proud adanian.

Adani Foundation is feeling proud to have employee volunteer like Shard Sharma – one of the HEROS AT WORK.

જીવન જીવવાના દરવાજા ખૂલે

મુજબા એક ૨૨ વર્ષના યુવાનની કથા છે. બેકારીના રોદણા રોનારા યુવાનોને પ્રેરણા આપે છે. બાળપણમાં જ, લગભગ બે વર્ષની વયે જ જેને થેલિસિમિયા મેજર હોવાની ખબર પડી હતી, તેવા નખત્રાણા તાલુકાના નાનકડા ગામ દેસલપર(ગુંતલી)ના રાજુ કરસન ચાવડાની સારવાર તો તેના માતાપિતા પોતાના ક્ષમતા મુજબ કરાવતા હતાં પરંતુ દસ વર્ષના રાજુને લઈને માતાપિતા ચોટીલા દર્શન કરવા ગયાં તો ત્યાં ગમખવાર અકસ્માતનો ભોગ બન્યાં ને



માતાપિતાને કાળે છીનવી લીધાં અને રાજુને પગમાં કાયમી ખોડ આવી. અનાથ બનેલા રાજુનો સહારો તેના માસી બન્યાં. બે વર્ષ તેમની સાથે રહ્યા બાદ રાજુ એક ચાની રેંકડી પર નોકરી કરીને પેટિયું રળવા લાગ્યો, પરંતુ આશરાનો સવાલ તો ઊભો જ હતો. ત્યાંના શેઠે તેને બહેર શૌચાલયમાં નોકરીએ રખાવ્યો. આશરો મળતો હોવાથી રાજુ ત્યાં કામ કરવા તૈયાર થઈ ગયો. રાજુ કહે છે, 'મારો પોતાનો કંઈ વિશેષ ખર્ચ નથી. મને રોજ ટિફિન મળે છે, એટલે જમવાનો ખર્ચ થતો નથી. રોટરી ક્લબની સહાયથી જી.કે. જનરલ હોસ્પિટલમાં દર મહિને મારું લોહી બદલાવાય છે. દવા પણ મને નિ:શુલ્ક મળે છે. આમ મારું જીવન ચાલ્યા કરે છે. કોઈ સામે હાથ લાંબો કર્યા વગર જીવાય તેને ભગવાનના આશીર્વાદ ગણું છું.' કામ નથી મળતું કહીને નિરાશ થનારા યુવાનો માટે રાજુ ખરેખર પ્રેરણાસ્ત્રોત સમો છે. ■

True Warrior : We Salute

This is the story of Raju residing at Desalpar village of Nakhatrana Taluka. He is lesser blessed child of the almighty as he got Thalassemia Major and needs blood transfusion regularly.

Not only this - he lost his parents at the age of 10 in accident. He started work at tea stall for bread n butter for two ends meet. Then he started work at public toilet with the help of Village leaders.

In all this miseries - he says with smile that due to GKGH Hospital he could elongate his life span.

Every Month blood transfusion and free medicine n guidance by thalassemia ward by Rotary saved his life...

We salute this warrior and wish him best wishes.

World Environment Day

World Environment Day was celebrated in Five Talukas by different activities related to conservation of Environment. These Events were organized in coordination with DDO, TDO, SDM and Village Leaders of all Five Talukas. The activities Tree Plantation, Check dam Augmentation work, Inauguration work of Godhatal Dam Deepening work.



555+ Tree
plantation
in Bhuj,
Mundra &
Nakhtrana
Taluka



9000+ cum
Augmentation
and deepening
work of check
dam in Mandvi
& Lakhpatri
Taluka



International Coastal Clean up Day



Mundra Adani foundation MUNDRA has celebrated swachhagraha related International Coastal Clean up Day celebrated with Coast Guard" with theme swachhagraha.. School students, Coast Guard staff and Adani foundation staff had cleaned Mandvi beach and give a message of swachhagraha.. At the end information given about swachhagraha project

Teacher's Day : Guru Vandana

Teachers day celebration in coordination with District Education Office and District Development Office with Adani Foundation - District Level Best teacher Award on this auspicious day.

13 teachers is selected after screening by DEO Office and tofay award will be given in presence of DEO, DPEO and Vasan bhai Ahir Minister Gujarat .



Divine Feelings Towards Mata no Madh



Mata no Madh is a village in Lakhpat Taluka of Kutch district, Gujarat, India. The village lies surrounded by hills on both banks of a small stream and has a temple dedicated to Ashapura Mata. She is considered patron deity of Kutch. The village is located about 105 km from Bhuj, the headquarters of Kutch district.

People used to go by foot to Mata no madh in Navaratri. Total 8 camps at different locations is inaugurated today in way towards Mata no Madh by Adani Foundation Bhuj and GKGH Hospital.

Total 34537 Patients were benefitted in this Camp

"Ayushman Bharat – Celebrating First Birthday !! "

On the first birth anniversary of "AYUSHMAN ENROLMENT CARD" Adani Foundation Bhuj and Mundra had successfully completed 11 Ayushman card enrollment camps in a single Day.



Skill Development Training Program for Schedule Cast Beneficiaries

we could able to fulfil target of training 1440 SC beneficiaries from Eight Talukas from Kutchhh for different courses.

Mr Vinod Chavda (MP, Kutchhh and Morabi) Mrs Lata Solanki (Pramukh, Nagar Palika,Bhuj) Mr Rohit (District Social Justice and Empowerment), Mr Jatin Trivedi (Head, ASDC)and Mr solanki (Chairman, social justice commitee Kutchhh) we're present.



courses

1. Hand embroidery
2. Self employed stitching
3. Mobile Repairing
4. Beauty parlor
5. Crane operator



Awards and Accolades

Apex India CSR Innovation Award 2019



Adani Foundation Mundra received **"Gold Award"** under Apex India CSR Innovation Award 2019 Today at Goa.

Cheif Guest of the event was Shri Prasad (Union Minister Goa,GOI) and Guest of Honour Mr Suri (Former Governor Goa).

From Adani Foundation Mundra - Mr Vijay Gosai (Coordinator SLD Projects) and Mr. Karsan Gadhvi (Sr PO SLD Projects) received the Award.



Awards and Accolades

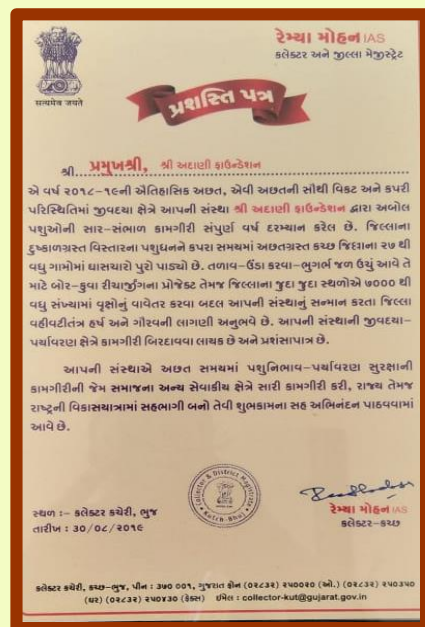


Sharing with Proud that Adani Foundation got felicitation from Mr Vijay Rupani Honrable Cheif Minister Gujarat for

1. Water Conservation works
2. More than 7000 Tree Plantation in Mundra, Anjar, Lakhpat and Mandvi Taluka

Felicitation of 3 CSR from Kutchh district for remarkable scarcity related work.

From Adani Foundation - Mr
Karsanbhai Gadhvi received Award.



Awards and Accolades



Ms. Pankti Shah was invited as a guest of honour for Mission Eco Next "Eco Eureka Training" by ministry of science and technology - Government of India at KSKV Bhuj.

Initiatives of Adani Foundation for Biodiversity and water conservation was shared on this platform.



Ms. Mavajibhai Baraiya was invited as a guest of honor for "Creating Sustainable Farming Villages" by Krushi Research and Development Association by Vagad Visa Oswal Samaj.

Initiatives of Adani Foundation for Fodder Sustainability and water conservation was shared by him.

Beneficiaries

No	Core Area	Beneficiaries	Remarks
1	Utthan (Education)	3000	Uthhan, Labour School, School Enrollment
2	Adani Vidya Mandir	450	School Students
3	UDAAN	15329	250 Institute Visited
4	Adani Skill Dev. Center	1544	Mundra and Bhuj
5	Health Mundra	30336	MHCU, Medical Camps, Senior Citizen
6	Health Bhuj	47526	Health Camps, Mahiti Setu,care
7	SLD Fisherman	5572	Water, Education, Mangroves etc.
8	SLD Agriculture	1232	Drip Irrigation, Bio gas, tissue
9	SLD Women Empowerment	132	Saheli mahila gruh udyog – 12 SHG
10	CID Work	12345	Pond deepening, AKBTPL,
11	Swachhagraha	5266	Mundra, Bhuj, Anjar and Gandhidham
12	Suposhan Mundra	21439	Adolescent, Children and RPA
13	CSR Tuna	745	Health Camp, Cattle feed,
14	CSR NaKhtrana	-	
15	CSR Bitta	2450	Pond Deepening, Fodder, School Praveshotsav
16	CSR Lakhpat	1890	Fodder, School Support, Dam Desilting

Adani Foundation -Mundra
Executive Summary-Budget Utilization up to September 2019

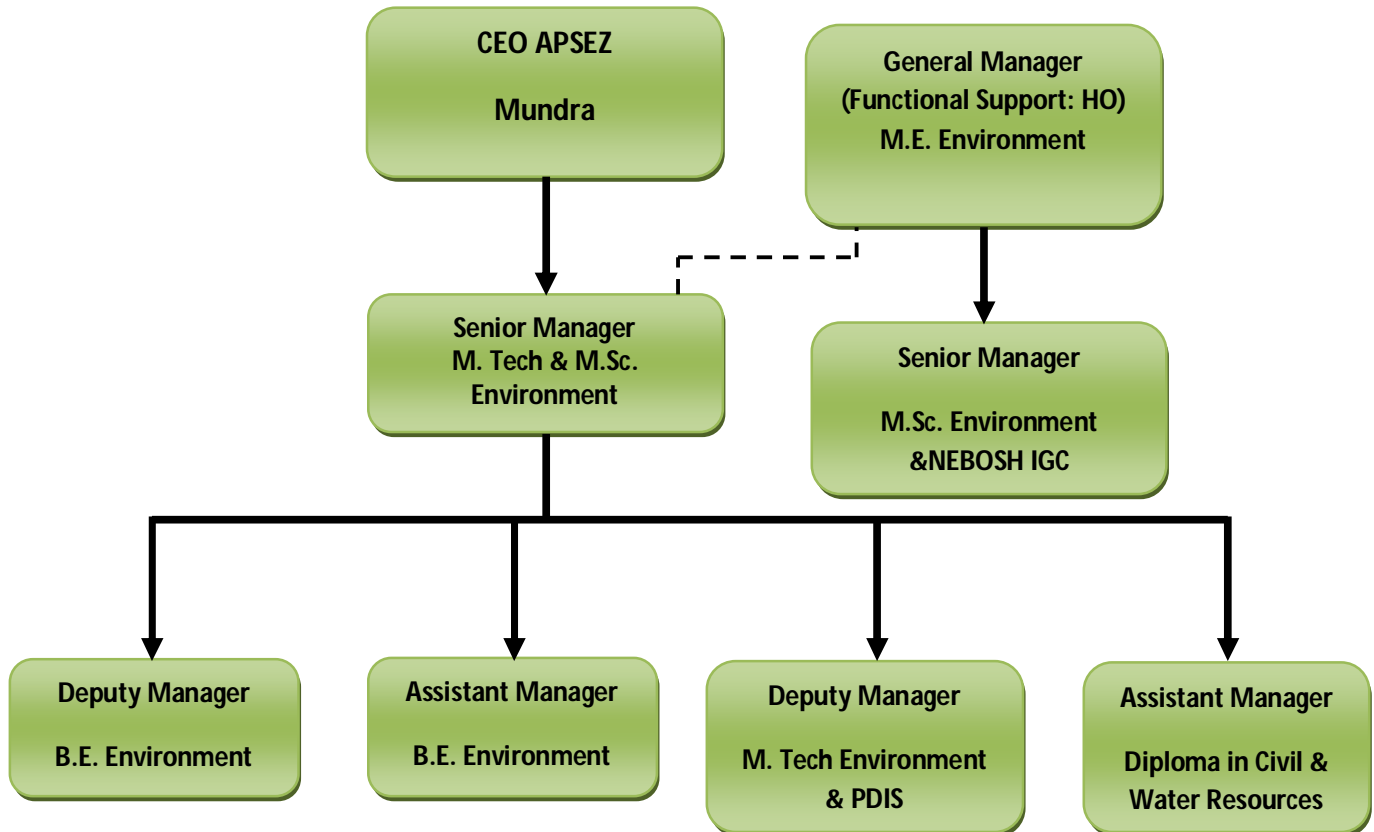
F.Y. 2019-20 (Rs. In Lacs)

Sr. No.	Budget Line Item	CAPEX	OPEX	Budget 2019-20	Expenditure up to Sept.19	% of utilization against FY 2019-20 budget
A	Admin Expense	1.30	70.20	71.50	28.56	39.94%
B.	Education	0.00	57.75	57.75	26.70	46.23%
C.	Community Health	0.60	220.06	220.66	78.91	35.76%
D.	Sustainable Livelihood Development	30.00	387.30	487.80	325.04	66.63%
E	Rural Infrastructure Development	358.93	33.10	321.53	28.53	8.87%
Total AF CSR Budget :		390.83	768.41	1159.24	487.73	42.07%
F.	Utthan - Education	49.97	58.96	108.93	31.86	29.25%
G.	Model Village	132.93	64.33	197.26	61.52	31.19%
Total Project Utthan Budget		182.90	123.29	306.19	93.38	30.50%
H.	Adani Vidya Mandir - Bhadreshwar	33.36	170.99	204.35	71.34	34.91%
Total AVMB Budget		33.36	170.99	204.35	71.34	34.91%
I.	Project Udaan_Mundra	5.00	368.14	373.14	92.41	24.77%
Total Project Udaan Budget		5.00	368.14	373.14	92.41	24.77%
GRAND TOTAL		612.09	1430.83	2042.92	744.86	36.46%

CSR

Annexure – 5

Organogram of Environment Management Cell, APSEZ, Mundra



Annexure – 6

Cost of Environmental Protection Measures

Sr. No.	Activity	Cost incurred (INR in Lacs)			Budgeted Cost (INR in Lacs)
		2017 – 18	2018 – 19	2019 – 20 (Till Sep'19)	2019 – 20
1.	Environmental Study / Audit and Consultancy	9.0	6.7	1.35	6.0
2.	Legal & Statutory Expenses	5.07	4.42	0.78	5.7
3.	Environmental Monitoring Services	27.02	20.36	11.23	25
4.	Hazardous / Non Hazardous Waste Management & Disposal	65.62	95.72	44.57	78.5
5.	Environment Days Celebration	2.85	0.28	3.5	10
6.	Treatment and Disposal of Bio-Medical Waste	1.13	1.21	0.68	1.5
7.	Mangrove Plantation, Monitoring & Conservation	60.0	47.0	Nil	Nil
8.	Other Horticulture Expenses	547.0	579.32	546.60	696.46
9.	O&M of Sewage Treatment Plant and Effluent Treatment Plant (including STP, ETP of Port & SEZ & Common Effluent Treatment Plant)	70.02	144.29	43.42	116.44
10.	Expenditure of Environment Dept. (Apart from above head)	102.15	109.28	75.13	102.5
Total		889.86	1008.58	727.26	1042.10