adani™

APSEZL/EnvCell/2015-16/041 Date: 24.11.2015

To
The Director (S),
Ministry of Environment & Forests,
E-5, Kendriya Paryavaran Bhawan,
Arera Colony, Link Road No. – 3,
Bhopal – 462 016
E-mail: rowz.bpl-mef@nic.in

पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय,
Ministry of Environment, Forests & Climate Change,
क्षेत्रीय कार्यालय (पश्चिम क्षेत्र) / Regional Office (Western Zone)
'केन्द्रीय पर्यावरण भवन',
'Kendriya Paryavaran Bhawan'
लिंक रोड नं.-3, ई-5, रविशंकर नगर,
Link Road No.-3, E-5, Ravishankar Nagar,

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 / CRZ Clearance for the period of Apr'15 to Sep'15 is enclosed here for your records. The stated information is also provided in form of a CD (soft copy).

Thank you,
Yours Faithfully,
For **Adani Ports and Special Economic Zone Limited**

Ennarasu Karunesan
Chief Executive Officer
Mundra 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, Gujarat – 390 023
3. Member Secretary, GPCB – Head Office, Paryavaran Bhavan, Sector 10 A, Gandhi Nagar, Gujarat– 382 010
4. Deputy Secretary, Forests & Environment Department, block – 14, 8th floor, Sachivalaya, Gandhi Nagar, Gujarat – 382 010
5. Regional Officer, Regional Office, GPCB – Katira Complex-1, Mangalam Char Rasta, Sanskar Nagar, Bhuj (Kutch), Gujarat - 370 001

Adani Ports and Special Economic Zone Ltd
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Mundra, Kutch 370 421
Gujarat, India

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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-2015 to September-2015

Index

Compliance Report

adani	**Adani Ports and SEZ Limited**	**From : April,15** **To : September,15**
Status of the conditions stipulated in Environment Clearance		

Half yearly Compliance report of Environment Clearance of "Single Point Mooring (SPM), Crude Oil Terminal (COT) and connecting pipes at Mundra Port, District Kutch"		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
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.	Details of the developed mangrove along the west of Navinal creek and green belt details are submitted to the Ministry of Environment and Forest along with half yearly compliance dated 02.12.2013.
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 outplay shall be provided to this ministry within 6 months from the date of receipt of this letter.	Details of the developed mangrove along the west of Navinal creek and green belt details are submitted to the Ministry of Environment and Forest along with half yearly compliance dated 02.12.2013.
3.	No dredging activity shall be carried out.	Project has been completed & in operation stage.
4.	No ground water should be tapped at the project site / within CRZ area.	Entire water requirement is sourced from Narmada water and desalination plant of M/s APSEZL.
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.	Oil spill contingency plan is in place and implemented. The same has been submitted to the Ministry along with Half yearly compliance report dated 29.05.14.

Half yearly Compliance report of Environment Clearance of "Single Point Mooring (SPM), Crude Oil Terminal (COT) and connecting pipes at Mundra Port, District Kutch"		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
6.	The duration of construction phase of the project should be kept to a maximum of 8 months to avoid impact on marine environment and birds as suggested by NIO.	Construction completed and project is in operation.
7.	It shall be ensured that there is no displacement of people, houses or fishing activity as a result of the project.	The project is in operational phase. There was no habitation and fishing activity at the project location during construction.
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.	APSEZL adopt 5R concept for environmentally sound management of different types of solid & liquid waste. Municipal Solid Waste - A well-established system for segregation of dry & wet waste is in place, by which all wet waste (Organic waste) is being segregated & utilized for compost manufacturing, compost is further used by in house horticulture team for green belt development. Whereas Dry Recyclable Waste - is being sorted out in various categories & finally being sent for recycling. E- Waste & Used Batteries - Is being sold to registered recycler. Solid Hazardous Waste - is being disposed through common facility i.e. TSDF. Used/Waste Oil - It is being sold to authorized recycler/reprocesser. Liquid Effluent & Sewage - It is being treated at ETP/STP plants, treated water from ETP/STP is being used for green belt development. Third party monitoring is being carried out by NABL and MoEF accredited agency. Summary of monitoring reports for duration from April,15 to September,15 are enclosed as **Annexure - 1.**

Half yearly Compliance report of Environment Clearance of "Single Point Mooring (SPM), Crude Oil Terminal (COT) and connecting pipes at Mundra Port, District Kutch"		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
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 phase so as to ensure that mangroves are not cut / destroyed for this purpose.	Construction Activities are completed.
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.	Oil spill contingency plan & Disaster Management plan is in place and implemented. Mock drills are conducted regularly. Details are attached as **Annexure – 2.**
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.	Details of the pipelines installed and report on free spans, lateral displacement and cathodic protection survey is submitted to the Ministry along with half yearly compliance dated 02.12.2013.
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.	Markers are installed to indicate position of pipeline. Photographs were submitted vide our submission dated 02.12.2013.

Half yearly Compliance report of Environment Clearance of "Single Point Mooring (SPM), Crude Oil Terminal (COT) and connecting pipes at Mundra Port, District Kutch"		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
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 details.	Display boards giving emergency information are placed. Photographs were submitted vide our submission dated 02.12.2013.
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.	Inspection activities are being carried out for prevention of oil spill at SPM.
15.	All conditions stipulated by the Forest and Environment Department, Government of Gujarat should be strictly implemented.	All the conditions stipulated by Forest and Environment Department have been complying with.
16.	All conditions stipulated in Gujarat Pollution Control Board vide their letter No. PC/NOC/381/1039 dated 8th January, 2002 should be implemented.	The project is in operation phase and has been granted for operations vide Consent to operate (CC&A) no. AWH 47854 valid till 2nd December, 2016 by GPCB.
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.	Construction activities are completed in accordance with the prevailing laws.
2	The project authorities 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.	The CSR Activities are planned out at group level at Mundra by Adani Foundation. Details of the CSR activity and expenditure from April,15 to September,15 is enclosed as **Annexure -3.**

Half yearly Compliance report of Environment Clearance of "Single Point Mooring (SPM), Crude Oil Terminal (COT) and connecting pipes at Mundra Port, District Kutch"		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
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.	Details of the fire fighting facility has been submitted along with the half yearly compliance report dated 2/12/2013.
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.	M/s APSEZL 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. Executive who directly reports to the top management.
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 Office at Bhopal.	• 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. • The plan budget for Environment Cell for the year 2015-16 is 484.11 lacs. • The spent budget for Environment Cell for the financial year 2015-16 (till Sept.'15) is 175.88 lacs. • The allocated budget of Horticulture Cell for the year 2015-16 was 486.83 lacs. • The spent budget of Horticulture Cell for the financial year 2015-16 (till Sept.'15) is 363.29 lacs.

Half yearly Compliance report of Environment Clearance of "Single Point Mooring (SPM), Crude Oil Terminal (COT) and connecting pipes at Mundra Port, District Kutch"		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
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.	M/s APSEZL is always extending full support to the regulatory authorities.
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.	Point noted.
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 Ministry.	Point noted.
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.	Complied.
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.	This condition does not belong to project proponent.

Half yearly Compliance report of Environment Clearance of "Single Point Mooring (SPM), Crude Oil Terminal (COT) and connecting pipes at Mundra Port, District Kutch"		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
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 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/	Complied.
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.	Complied.
14	The project proponent will obtain Forest clearance for any stretch of land if it passes through the forest land.	Information submitted on 02.12.2013.
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.	Construction activities are completed.
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. Construction activities are completed.

Half yearly Compliance report of Environment Clearance of "Single Point Mooring (SPM), Crude Oil Terminal (COT) and connecting pipes at Mundra Port, District Kutch"		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
17	Budgetary break up for Environmental Management Plan for the project to be mentioned.	• 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. • The plan budget for Environment Cell for the year 2015-16 is 484.11 lacs. • The spent budget for Environment Cell for the financial year 2015-16 (till Sept.'15) is 175.88 lacs. • The allocated budget of Horticulture Cell for the year 2015-16 was 486.83 lacs. • The spent budget of Horticulture Cell for the financial year 2015-16 (till Sept.'15) is 363.29 lacs.

Annexure – A

Half yearly Compliance report of CRZ recommendation for "SPM,COT and connecting pipeline at Mundra Port, Dist. Kutch in Gujarat"		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
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 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.
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.
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 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.	Project is in operation phase.
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.	Study has been completed and report submitted to MoEF.

Half yearly Compliance report of CRZ recommendation for "SPM,COT and connecting pipeline at Mundra Port, Dist. Kutch in Gujarat"		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
6	The ground water shall not be tapped in any case to meet with the water requirements during construction and/or operation phases.	Entire water requirement is sourced from Narmada water and desalination plant of APSEZL.
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 ensured by the GAPL that the nearby mangroves are not at all affected due to proposed development activities specifically the COT.	Construction activity is already completed. Details of culverts provided and creek system is submitted to the Ministry of Environment and forest along with half yearly compliance dated 02.12.2013.
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.	Details of the developed mangrove along the west of Navinal creek and green belt details were submitted to the Ministry of Environment and Forest along with half yearly compliance dated 02.12.2013. Details on mangroves afforestation carried out by APSEZL till date is annexed as **Annexure – 4.**
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.	A well-established Horticulture Dept. in place with qualified Horticulture expert. Adequate plantation have been done at port area. Details of the developed green belt were already submitted to the Ministry of Environment and Forest along with half yearly compliance dated 02.12.2013.
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 Vessesl Traffic Management System in the Gulf of Kachchh, for the purpose of the environment protection/management.	Point noted.

Half yearly Compliance report of CRZ recommendation for "SPM,COT and connecting pipeline at Mundra Port, Dist. Kutch in Gujarat"

Sr. No.	Conditions	Compliance Status as on 30-09-2015
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.	Point noted.
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.
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.	Project has been completed & in operation stage.
14	No waste including the construction debris, oily waste from construction 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.	▪ No waste is disposed in sea/river/creek. Sewage generated is being treated at Sewage Treatment Plant. Treated water is being utilized for Horticulture purpose. ▪ No discharge of untreated effluent is allowed into marine environment inside port limits and APSEZL does not receive sewage/liquid waste from ship. ▪ Oily sludge (a mixture of oil, water and dirt) is disposed through authorized recycler / re-processor. ▪ The quality of treated effluent is being monitored regularly by a MoEF/NABL accredited agency. Summary of monitoring reports for duration from April,15 to September,15 are enclosed as **Annexure - 1.**

Half yearly Compliance report of CRZ recommendation for "SPM,COT and connecting pipeline at Mundra Port, Dist. Kutch in Gujarat"

Sr. No.	Conditions	Compliance Status as on 30-09-2015
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.	APSEZL has participated in VTMS program. Details submitted on 02.12.2013.
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 with. Mutual aid system in place.
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.	Complied with. Oil spill contingency plan is in place and implemented. Mock drills are conducted regularly. Details are attached as **Annexure – 2.**
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.	Project has been completed & in operation stage.

Half yearly Compliance report of CRZ recommendation for "SPM,COT and connecting pipeline at Mundra Port, Dist. Kutch in Gujarat"		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
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 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.	Complied. Construction activity is already completed, project is in operation phase.
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.	Aspects of social and health impact were studies as part of EIA and mitigative measures have been implemented.
21	The GAPL shall work out a detailed socio-economic upliftment programme in consultation with the District Collector and District Development Officer and shall implemented the same. Separate budgetary provisions shall be kept for this purpose.	Detailed socio-economic upliftment programme are planned out at group level at Mundra by Adani Foundation. Details of the social upliftment activity and expenditure from April,15 to September,15 is enclosed as **Annexure -3.**

adani	Adani Ports and SEZ Limited	From : April,15 To : September,15
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"		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
22	An Environmental Management Cell with person having proper background shall constituted. A separate budgetary provision shall have to be made for implementation of the Environmental Management Plan.	APSEZL 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. Executive who directly reports to the top management. • The plan budget for Environment Cell for the year 2015-16 is 484.11 lacs. • The spent budget for Environment Cell for the financial year 2015-16 (till Sept.'15) is 175.88 lacs. • The allocated budget of Horticulture Cell for the year 2015-16 was 486.83 lacs. • The spent budget of Horticulture Cell for the financial year 2015-16 (till Sept.'15) is 363.29 lacs.
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 and Environment Department, GoG every year.	Post project environmental monitoring is being carried out regularly through NABL and MoEF accredited Laboratory. Summary of monitoring reports for duration from April,15 to September,15 are enclosed as **Annexure - 1.**
24	No construction activities shall be carried out by the GAPL in any of the Forest areas.	Complied.
25	All necessary clearances from different Government Department/Agencies shall be obtained before commissioning any construction activities.	All necessary clearances as per prevailing laws have been already obtained. Project commissioned & in operation stage.
26	A half yearly compliance report with respect to above mentioned conditions as well as the implementation of the suggestions/recommendations of the EIA and Risk Assessment reports shall be furnished to the Forest and Environment Department, GoG , without fail at regular interval.	Half yearly compliance report is being submitted regularly. Last half yearly compliance report was submitted to Ministry of Environment and Forest on 28.05.2015 in soft as well as hard copy.

Half yearly Compliance report of CRZ recommendation for "SPM,COT and connecting pipeline at Mundra Port, Dist. Kutch in Gujarat"		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
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

"HALF YEARLY ENVIRONMENTAL MONITORING REPORT"

FOR

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

MONITORING PERIOD:
APRIL 2015 TO SEPTEMBER 2015

PREPARED BY:

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H. T. Shah
Lab Manager

POLLUCON LABORATORIES PVT. LTD. SURAT-3

Dr. ArunBajpai
Lab Manager (Q)

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 2015		May 2015		June 2015		July 2015		August 2015		September 2015		Test Method
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	7.9	8.05	8.01	8.12	8.1	8.15	7.98	8.12	7.58	8.06	8.02	8	IS3025(P11)83Re.02
2	Temperature	°C	30	31	29	30	29	30	28	29	28	29	29	30	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	22	16	16	22	12	18	20	22	14	20	14	20	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	IS 3025 (P44)1993Re.03 Edition2.1
5	Dissolved Oxygen	mg/L	5.4	4.8	5.8	5	5.4	4.4	5.8	4.4	5.6	4.8	5.6	4.6	IS3025(P38)89Re.99
6	Salinity	ppt	40.3	40.9	41.2	41.7	40.2	40.9	41.6	42.2	40.8	41.8	41.2	42.8	APHA (22nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	0.18	BDL*	0.24	BDL*	BDL*	BDL*	APHA(22nd Edi)5520D
8	Nitrate as NO_3	mg/L	0.72	0.89	0.56	0.72	0.34	0.52	0.42	0.58	0.54	0.62	0.532	0.598	IS3025(P34)88
9	Nitrite as NO_2	mg/L	0.064	0.077	0.021	0.034	0.028	0.046	0.026	0.04	0.022	0.044	0.03	0.047	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH_3	mg/L	0.86	0.96	0.96	1.1	1.2	1.4	1.0	1.2	0.9	1.1	0.924	1.1	IS3025(P34)88Cla.2.3
11	Phosphates as PO_4	mg/L	0.056	0.074	0.084	0.096	0.94	1.04	0.88	0.94	0.72	0.84	1.03	1.215	APHA(22nd Edi) 4500 C
12	Total Nitrogen	mg/L	4.1	4.7	1.54	1.85	1.31	1.606	1.45	1.84	1.61	1.82	1.486	1.745	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	6	BDL*	4	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	49750	50440	48770	49060	47690	48140	49850	50510	48186	49760	48593	48878	IS3025(P16)84Re.02
15	COD	mg/L	20	28	24	32	22	28	16	24	18	22	19	28	APHA(22nd Edi) 5520-D Open Reflux

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16	Oxidisable Particular Organic Carbon	%	0.68	0.49	0.5	0.4	0.58	0.48	0.56	0.48	0.52	0.44	0.6	0.44	SOP – PLPL - 07
A	**Flora and Fauna**														
17	Primary productivity	mgC/L /day	3.2	2.1	2.7	1.575	2.925	0.45	2.25	0.45	1.575	0.563	1.125	0.338	APHA (22nd Edi) 10200-J
B	**Phytoplankton**														
18.1	Chlorophyll	mg/m^3	3.79	2.99	2.75	0.99	2.857	1.602	1.682	0.134	1.81	0.134	1.28	0.267	APHA (22^{nd}Edi) 10200-H
18.2	Phaeophytin	mg/m^3	BDL*	BDL*	BDL*	1.54	BDL*	0.98	0.579	1.717	0.128	1.77	0.98	1.39	APHA (22^{nd}Edi) 10200-H
18.3	Cell Count	Unit x $10^3/L$	114	154	248	109	292	110	221	59	158	41	147	52	APHA (22^{nd} Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	Diatom	Diatom	Diatom	Diatom	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	APHA (22^{nd} Edi) 10200-H
			Thalassiosira sp.	*Thalassiosira sp.*	*Thalassionema sp.*	*Thalassionema sp.*	*Biddulphia sp.*	*Nitzschia sp.*	*Chaetoceros sp.*	*Fragillaria sp.*	*Nitzschia sp.*	*Navicula sp.*	*Nitzschia sp.*	*Navicula sp.*	
			Nitzschia sp.	*Navicula sp.*	*Nitzschia sp.*	*Navicula sp.*	*Gyrosigma sp*	*Gomphonema sp.*	*Rhizosolenia sp.*	*Navicula sp.*	*Rhizosolenia sp.*	*Gyrosigma sp.*	*Rhizosolenia sp.*	*Fragillaria sp.*	
			Navicula sp.	*Coscinodiscus sp.*	*Melosira sp.*	*Coscinodiscus sp.*	*Pinnularia sp.*	*Cyclotella sp.*	*Pinnularia sp.*	*Cocconeis sp.*	*Thallasiosira sp*	*Cyclotella sp.*	*Navicula sp.*	*Pinnularia sp.*	
			Melosira sp.	--	*Fragillaria sp.*	*Rhizosolenia sp.*	*Pinnularia sp.*	Green Algae	*Navicula sp.*	Cyanophyceae	*Synedra sp.*	*Fragillaria sp.*	*Asterionella sp.*	*Biddulphia sp.*	
			Fragillaria sp.	--	Green algae	--	Cyanophyceae	*Chlorella sp.*	*Gomphonema sp.*	*Spirulina sp.*	Green Algae	Green Algae	*Cymbella sp.*	Green Algae	
			--	--	*Chlorella sp.*	--	*Microcystis sp.*	*Pandorina sp.*	Cyanophyceae	Green Algae	*Oscillatoria sp.*	*Chlorella sp.*	*Synedra sp.*	*Ulothrix sp.*	
					Ulthrix		*Spirulina sp.*		Anabaena sp.	Hydrodictyon sp.	*Green Algae*		Green Algae	Cyanophyceae	
									Oscillatoria sp.	Spirogyra sp.	*Chlorella sp.*		*Pandorina sp.*	*Oscillatoria sp.*	
									Green Algae		*Pediastrum sp.*		*Pediastrum sp.*	*Spirulina sp.*	
									Volvox sp.				*Ulothrix sp.*	--	
									Chlorella sp.				Cyanophyceae		
									Pediastrum sp.				*Oscillatoria sp.*		

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C	**Zooplanktons**													
19.1	Abundance (Population)	no/m^2	380	270	430	190	250	100	150	40	190	70	280	60	APHA (22nd Edi) 10200-G
19.2	Name of Group Number and name of group species of each group	--	*Polychaetes*	*Polychaetes*	*Polychaete worms*	*Polychaete worms*	Ctenophores	Polychaetes	Polychaetes	Crustaceans	Polychaete Worms	Isopods	Gastropods	Copepods	APHA (22nd Edi) 10200-G
			Bivlaves	*Molluscan*	*Bivalves*	*Molluscans*	Gastropods	Decapods	Krill	Nematodes	Nematodes	Gastropods	Isopods	Polychaete worms	
			Gastropods	*Branchyurans*	*Gastropods*	*Decapods*	Copepods	--	Copepods	Bivalves	Decapods	Decapods	Decapods	Crustaceans	
			Copepods	--	*Copepods*	*Branchyurans*	--	--	Crustaceans	--	Molluscans	--	Krill		
			--	--	--	--	--	--	Isopods	--	Snail	--	Namatodes		
			--	--	--	--	--	--	Ostracods	--	--	--	Molluscans		
			--	--	--	--	--	--	--	--	--	--	Copepods		
19.3	Total Biomass	ml/100 m^3	29	18	72	48	79	23	41	8	28	9	38	23	APHA (22nd Edi) 10200-G
D	**Microbiological Parameters**														
20.1	Total Bacterial Count	CFU/ml	1522	1481	1620	1500	1740	1460	1824	1320	1740	1260	1130	870	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22ndEdi)9221-D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Edi.2.4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-5)

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POLLUCON LABORATORIES PVT. LTD. SURAT-3

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Lab Manager (Q)

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

SR. NO.	TEST PARAMETERS	UNIT	April 2015	May 2015	June 2015	July 2015	August 2015	September 2015	Test Method
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.57	0.64	0.49	0.52	0.54	0.352	FCO:2007
2	Phosphorus as P	mg/kg	137	160	139	154	146	146	APHA(22nd Edi) 4500 C
3	Texture	--	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	**Heavy Metals**								
5.1	Aluminum as Al	%	4.8	5	5.2	5	5.4	4.99	AAS APHA 3111 B
5.2	Total Chromium as Cr^{+3}	mg/kg	98	130	176	220	190	189	AAS 3111B
5.3	Manganese as Mn	mg/kg	740	860	910	830	880	789	AAS APHA 3111 B
5.4	Iron as Fe	%	2.05	2.4	2.5	2.08	3.1	2.61	AAS APHA(22nd Edi)3111 B
5.5	Nickel as Ni	mg/kg	59	48	56	60	58	57.96	AAS APHA(22nd Edi)3111 B
5.6	Copper as Cu	mg/kg	37	54	34	40	36	37.99	AAS APHA(22nd Edi)3111 B
5.7	Zinc as Zn	mg/kg	142	164	156	132	144	143	AAS APHA(22nd Edi)3111 B
5.8	Lead as Pb	mg/kg	2.6	1.8	1.4	1.02	1.22	1.13	AAS APHA(22nd Edi)3111 B
5.9	Mercury as Hg	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Polychaete worms Bivalves Crustaceans	Polychaeteworms Crustaceans Isopods Decapods	Amphipods Mysids Echinoderms	Isopods Mysids Echinoderms Polychaete Worms	Echinoderms Isopods Knill Anthozoans	Crabs Anthozoans Isopods Decapods	APHA (22nd Edi) 10500-C
6.2	MeioBenthos	--	Gastroriches Smaller Crustaceans	Nematodes Smaller Crustaceans	Copepods	Hydrozoan Copepods	Nematodes Foraminiferans	Copepods Foraminiferans	APHA (22nd Edi) 10500-C
2	Population	no/m^2	308	252	377	440	377	288	APHA (22nd Edi) 10500-C

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Lab Manager

POLLUCON LABORATORIES PVT. LTD. SURAT-3

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Lab Manager (Q)

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

SR. NO.	TEST PARAMETERS	UNIT	April 2015		May 2015		June 2015		July 2015		August 2015		September 2015		Test Method
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	8.05	8.1	8.1	8.17	7.95	8.02	8.25	8.38	8.14	8.2	7.91	8.03	IS3025(P11)83Re.02
2	Temperature	°C	31	31	30	31	27	28	29	30	29	30	29	30	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	24	38	18	20	21	28	24	34	22	30	16	26	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	BDL*	BDL*	BDL*	BDL*	BDL *	BDL *	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	IS 3025 (P44)1993Re.03 Edition2.1
5	Dissolved Oxygen	mg/L	5.6	4.4	5.4	4.8	5.6	4.6	5.4	4.6	5.8	4.8	5.4	4.4	IS3025(P38)89Re.99
6	Salinity	ppt	43.6	44.2	41.8	42.2	42.2	42.7	40.4	41.2	39.8	41.4	40.8	42.6	APHA (22nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	0.84	BDL*	0.52	BDL*	0.3	BDL*	0.4	BDL*	0.4	BDL*	APHA(22nd Edi)5520D
8	Nitrate as NO_3	mg/L	0.64	0.82	0.54	0.66	0.72	0.94	0.54	0.76	0.68	0.82	0.34	0.458	IS3025(P34)88
9	Nitrite as NO_2	mg/L	0.072	0.054	0.028	0.054	0.021	0.026	0.03	0.05	0.026	0.052	0.018	0.036	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH_3	mg/L	0.32	0.46	0.42	0.51	0.81	0.72	0.8	1.0	0.72	0.9	0.32	0.406	IS3025(P34)88Cla.2.3
11	Phosphates as PO_4	mg/L	0.086	0.062	0.14	0.094	0.18	0.11	0.2	0.14	0.18	0.1	0.36	0.27	APHA(22nd Edi) 4500 C
12	Total Nitrogen	mg/L	2.1	2.6	1.5	1.2	1.55	1.68	1.4	1.81	1.44	1.82	0.678	0.9	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	3.2	BDL*	1.2	BDL*	1.8	BDL*	1.6	BDL*	1.4	BDL*	1.4	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	49750	50400	48210	49170	50710	51240	48930	49900	48580	49990	47990	48380	IS3025(P16)84Re.02
15	COD	mg/L	16	18	12	20	18	20	20	22	16	18	14	19	APHA(22nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.82	0.32	0.62	0.48	0.44	0.48	0.4	0.44	0.56	0.46	0.34	0.38	SOP – PLPL - 07
A	**Flora and Fauna**														

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17	Primary productivity	mgC/L /day	3.2	1.0	1.57	0.45	2.02	0.225	2.7	0.675	1.68	0.45	1.238	0.225	APHA (22nd Edi) 10200-J
B	**Phytoplankton**														
18.1	Chlorophyll	mg/m^3	5.79	5.17	1.22	0.854	2.59	0.187	2.163	0.561	1.92	0.561	1.095	0.134	APHA (22^{nd}Edi) 10200-H
18.2	Phaeophytin	mg/m^3	BDL*	BDL*	1.37	1.99	BDL*	2.39	BDL*	0.897	0.227	0.897	1.671	1.493	APHA (22^{nd}Edi) 10200-H
18.3	Cell Count	Unit x $10^3/L$	170	110	198	50	245	74	254	67	169	39	155	45	APHA (22^{nd} Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	Diatom	Diatom	Diatom	Diatom	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	APHA (22^{nd} Edi) 10200-H
			Nitzschia sp	*Nitzschia sp*	*Nitzschia sp.*	*Nitzschia sp.*	*Coscinodiscus sp.*	*Navicula sp.*	*Coscinodiscus sp.*	*Navicula sp.*	*Nitzschia sp.*	*Navicula sp.*	*Navicula sp.*	*Navicula sp.*	
			Melosira sp	*Coscinodiscus sp*	*Biddulphia sp.*	*Coscinodiscus sp.*	*Rhizosolenia sp.*	*Biddulphia sp.*	*Rhizosolenia sp.*	*Biddulphia sp.*	*Synedra sp.*	*Cyclotella sp.*	*Synedra sp.*	*Fragillaria sp.*	
			Asterionella sp	*Pleurosigma sp.*	*Fragillaria sp.*	*Synedra sp.*	*Thallasiosira sp.*	*Nitzschia sp.*	*Gomphonema sp.*	*Pinnularia sp.*	*Rhizosolenia sp.*	*Fragillaria sp.*	*Coscinodiscus sp.*	*Gyrosigma sp.*	
			Coscinodiscus sp	--	*Coscinodiscus sp.*	Cynophyceae	Green Algae	*Pleurosigma sp.*	*Cymbella sp.*	*Gyro sigma sp.*	*Pleurosigma sp.*	Green Algae	*Asterionella sp.*	*Pinnularia sp.*	
			Thalassionema sp	--	*Thalassionema sp.*	*Oscillatoria sp.*	*Ankistrodesmus sp.*	Green Algae	*Synedra sp.*	Green Algae	*Coscinodiscus sp.*	*Spirogyra sp.*	*Gyrosigma sp.*	*cyanophyceae*	
			Desmids	--	Desmids	--	*Pandorina sp.*	*Volvox sp.*	*Tabellaria sp.*	*Scenedesmus sp.*	Green Algae	*Chlorella sp.*	*Cocconeis sp.*	*Lyngbya sp.*	
			Clostericem sp	--	*Closterium sp.*	--	*Chlorella sp.*	--	*Green Algae*	*Spirogyra sp.*	Chlorella sp.	--	*Pinnularia sp.*	*Oscillatoria sp.*	
			--	--	--	--	*Volvox sp.*	--	*Ankistrodesmus sp.*	--	Pediastrum sp.	--	Green Algae	--	
			--	--	--	--		--	*Pediastrum sp.*	--	Desmids	--	*Pandorina sp.*	--	
			--	--	--	--		--	*Ulothrix sp.*	--	Cosmarium sp.	--	*Chlorella sp.*	--	
			--	--	--	--		--	*Desmids*	--	Cyanophyceae	--	Cyanophyceae	--	
			--	--	--	--		--	*Closterium sp.*	--	Oscillatoria sp.	--	*Oscillatoria sp.*	--	
			--	--	--	--		--	--	--	--	--	*Nostoc sp.*	--	
			--	--	--	--		--	--	--	--	--	--	--	
C	**Zooplanktons**														
19.1	Abundance (Population)	no/m^2	400	200	370	120	400	150	170	30	200	40	320	100	APHA (22^{nd} Edi) 10200-G

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19.2	Name of Group Number and name of group species of each group	--	*Echinoderms*	*Polychaeworms*	*Gastropods*	*Foraminiferans*	Polychaetes Worms	Gastrpods	Krill	Polychaete Worms	Copepods	Molluscans	Crustaceans	Gastropods	APHA (22nd Edi) 10200-G
			Gastropods	*Foraminiferans*	*Polychaeworms*	*Ostracods*	Nematodes	Mysids	Copepods	Ctenophores	Isopods	Gastropods	Copepods	Polychaete worms	
			Polychaeworms	--	*Nematods*	--	Echinoderms	Snail	Gastropods	Cyclops	Gastropods	--	Krill	--	
			Nematodes	--	--	--	--	--	Decapods	--	Polychaete Worms	--	Polychaete worms	--	
			--	--	--	--	--	--	Lamellibranches	--	--	--	Decapods	--	
19.3	Total Biomass	ml/100 m^3	29	14	30	4	88	34	55	11	62	7	59	6	APHA (22nd Edi) 10200-G
D	**Microbiological Parameters**														
20.1	Total Bacterial Count	CFU/ml	1745	1904	1850	2020	1880	2100	1930	1580	1850	1620	1670	1420	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22ndEdi)9221-D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Edi.2.4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-5)

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POLLUCON LABORATORIES PVT. LTD. SURAT-3

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Lab Manager (Q)

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

SR. NO.	TEST PARAMETERS	UNIT	April 2015	May 2015	June 2015	July 2015	August 2015	September 2015	Test Method
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.71	0.56	0.48	0.54	0.52	0.366	FCO:2007
2	Phosphorus as P	mg/kg	140	164	210	180	200	141	APHA(22nd Edi) 4500 C
3	Texture	--	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	**Heavy Metals**								
5.1	Aluminum as Al	%	6.4	5.6	5.4	5.6	5.2	5.2	AAS APHA 3111 B
5.2	Total Chromium as Cr^{+3}	mg/kg	140	116	128	180	142	135	AAS 3111B
5.3	Manganese as Mn	mg/kg	620	780	810	770	806	609	AAS APHA 3111 B
5.4	Iron as Fe	%	2.8	2.4	2.72	2.16	2.62	2.01	AAS APHA(22nd Edi)3111 B
5.5	Nickel as Ni	mg/kg	48	56	54	58	60	41.99	AAS APHA(22nd Edi)3111 B
5.6	Copper as Cu	mg/kg	52	39	158	110	158	97.9	AAS APHA(22nd Edi)3111 B
5.7	Zinc as Zn	mg/kg	114	146	163	148	156	157	AAS APHA(22nd Edi)3111 B
5.8	Lead as Pb	mg/kg	2.1	1.9	1.2	1.16	1.24	1.58	AAS APHA(22nd Edi)3111 B
5.9	Mercury as Hg	mg/kg	0.8	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Polychaete worms Bivalves Crustaceans	Mysids Polychaeteworms Crustaceans	Polychaete Worms Echinoderms Snail Crab	Isopods Echinoderms Decapods Crab Amphipods	Polychaete Worms Anthozoans Echinoderms	Echinoderms Polychaete worms Isopods Prawn Decapods	APHA (22nd Edi) 10500-C
6.2	MeioBenthos	--	Nematodes	Nematodes Copopods	Foraminiferans Hydrozoa	Foraminiferans Copepods	Ostracodes Hydrozoa	Nematodes Copepods	APHA (22nd Edi) 10500-C
2	Population	no/m^2	240	440	503	503	440	337	APHA (22nd Edi) 10500-C

H. T. Shah
Lab Manager

POLLUCON LABORATORIES PVT. LTD. SURAT-3

Dr. ArunBajpai
Lab Manager (Q)

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

SR. NO.	TEST PARAMETERS	UNIT	July 2015		August 2015		Test Method
			SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	7.62	8.08	7.55	7.92	IS3025(P11)83Re.02
2	Temperature	°C	29	30	29	30	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	22	25	30	38	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	BDL*	BDL*	BDL*	BDL*	IS 3025 (P44)1993Re.03Edition2.1
5	Dissolved Oxygen	mg/L	5.4	4.6	5.6	4.8	IS3025(P38)89Re.99
6	Salinity	ppt	42.8	43.02	41.66	42.92	APHA (22nd Edi) 2550 B
7	Oil & Grease	mg/L	0.2	BDL*	0.3	BDL*	APHA(22nd Edi)5520D
8	Nitrate as NO_3	mg/L	0.3	0.42	0.28	0.36	IS3025(P34)88
9	Nitrite as NO_2	mg/L	0.019	0.028	0.02	0.026	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH_3	mg/L	0.8	0.9	0.7	0.8	IS3025(P34)88Cla.2.3
11	Phosphates as PO_4	mg/L	0.64	0.81	0.58	0.72	APHA(22nd Edi) 4500 C
12	Total Nitrogen	mg/L	1.12	1.35	1.08	1.21	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	51288	51492	49920	51430	IS3025(P16)84Re.02
15	COD	mg/L	18	28	20	26	APHA(22nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.31	0.2	0.28	0.21	SOP – PLPL - 07
A							
17	Primary productivity	mgC/L/day	2.25	0.225	1.46	0.113	APHA (22nd Edi) 10200-J
B							
18.1	Chlorophyll	mg/m^3	2.05	0.053	1.01	0.24	APHA (22nd Edi) 10200-H
18.2	Phaeophytin	mg/m^3	0.523	2.52	1.56	2.17	APHA (22nd Edi) 10200-H
18.3	Cell Count	Unit x 10^3/L	254	25	178	18	APHA (22nd Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	APHA (22nd Edi) 10200-H
			Synedra sp.	*Nitzschia sp.*	*Cymbella sp.*	*Fragillaria sp.*	
			Nitzschia sp.	*Navicula sp.*	*Pinnularia sp.*	*Pinnularia sp.*	
			Rhizosolenia sp.	*Gyro sigma sp.*	*Coscinodiscus sp.*	*Navicula sp.*	
			Thallasiosira sp	Green Algae	*Rhizosolenia sp.*	*Nitzschia sp.*	
			Coscinodiscus sp.	*Chlorella sp.*	Green Algae	*Gyro sigma sp.*	
			Green Algae	Desmids	*Chlorella sp.*	Green Algae	
			Scenedesmus sp.	Closterium sp.	*Oedogonium sp.*	Chlorella sp.	
			Chlorella sp.	--	*Oscillatoria sp.*	--	
			Spirogyra sp.	--	*Anabaena sp.*	--	
			Cyanophyceae	--	--	--	
			Nostoc sp.	--	--	--	
			Oscillatoria sp.	--	--	--	
			--	--	--	--	

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			--	--	--	--	
C							
19.1	Abundance (Population)	no/m^2	150	30	213	25	APHA (22nd Edi) 10200-G
19.2	Name of Group Number and name of group species of each group	--	Polychaete Worms	Gastropods	Copepods	Polychaete Worms	APHA (22nd Edi) 10200-G
			Echinoderms	Isopods	Ostracods	Decapods	
			Molluscans	--	Crustaceans	Nauplies	
			--	--	Krill	--	
			--	--	Ctenophores	--	
19.3	Total Biomass	ml/100 m^3	46	7	54	9	APHA (22nd Edi) 10200-G
D							
20.1	Total Bacterial Count	CFU/ml	1840	1550	1680	1375	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	APHA(22ndEdi)9221-D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	IS:1622:1981Edi.2.4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	IS : 5887 (P-5)

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

SR. NO.	TEST PARAMETERS	UNIT	July 2015	August 2015	Test Method
			SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.52	0.58	FCO:2007
2	Phosphorus as P	mg/kg	150	146	APHA(22nd Edi) 4500 C
3	Texture	--	Sandy Loam	Sandy Loam	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	BDL*	PLPL-TPH
5					
5.1	Aluminum as Al	%	5.4	4.8	AAS APHA 3111 B
5.2	Total Chromium as Cr^{+3}	mg/kg	140	180	AAS 3111B
5.3	Manganese as Mn	mg/kg	890	860	AAS APHA 3111 B
5.4	Iron as Fe	%	2.02	1.88	AAS APHA(22nd Edi)3111 B
5.5	Nickel as Ni	mg/kg	52	50	AAS APHA(22nd Edi)3111 B
5.6	Copper as Cu	mg/kg	36	38	AAS APHA(22nd Edi)3111 B
5.7	Zinc as Zn	mg/kg	138	140	AAS APHA(22nd Edi)3111 B
5.8	Lead as Pb	mg/kg	1.6	1.46	AAS APHA(22nd Edi)3111 B
5.9	Mercury as Hg	mg/kg	BDL*	BDL*	AAS APHA- 3112 B
6					
6.1	Macrobenthos	--	Polychaete Worms Bivalves Anthozoans	Polychaete Worms Echinoderms Bivalves Mysids Decapods	APHA (22nd Edi) 10500-C
6.2	MeioBenthos	--	Foraminiferans Copepods	Nematodes Bryozoans	APHA (22nd Edi) 10500-C
2	Population	no/m^2	337	385	APHA (22nd Edi) 10500-C

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RESULTS OF MARINE WATER [M4 JUNA BANDAR N 22°47'577" E 069°43'620"]

SR. NO.	TEST PARAMETERS	UNIT	April 2015		May 2015		June 2015		July 2015		August 2015		September 2015		Test Method
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	7.95	8.1	8.1	8.2	8.06	8.15	8.26	8.4	8.17	8.34	8.02	8	IS3025(P11)83Re.02
2	Temperature	°C	31	32	29	31	28	30	28	29	29	30	29	30	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	18	20	26	30	24	28	26	30	28	30	28	32	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	IS 3025 (P44)1993Re.03 Edition2.1
5	Dissolved Oxygen	mg/L	5.4	4	5.6	5	5.8	4.8	5.4	4.8	5.6	5	5.8	4.8	IS3025(P38)89Re.99
6	Salinity	ppt	43.1	44.2	42.7	43.2	40.2	41.6	40	41.2	41.6	42.8	38.4	39.1	APHA (22nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22nd Edi)5520D
8	Nitrate as NO_3	mg/L	0.44	0.53	0.32	0.18	0.44	0.28	0.48	0.26	0.4	0.24	0.384	0.222	IS3025(P34)88
9	Nitrite as NO_2	mg/L	0.052	0.068	0.058	0.08	0.062	0.084	0.058	0.07	0.06	0.082	0.054	0.076	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH_3	mg/L	0.72	0.8	0.96	1.24	1.1	1.26	1.2	1.3	0.76	0.94	1.01	1.29	IS3025(P34)88Cla.2.3
11	Phosphates as PO_4	mg/L	0.044	0.058	0.076	0.086	0.094	0.12	0.44	0.56	0.36	0.44	0.54	0.675	APHA(22nd Edi) 4500 C
12	Total Nitrogen	mg/L	3.1	3.6	1.34	1.8	1.6	1.62	1.74	1.6	1.24	1.28	1.448	1.588	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	52100	53200	55760	52240	53940	54000	53070	53520	54120	55846	45313	46173	IS3025(P16)84Re.02
15	COD	mg/L	20	26	16	20	24	32	22	30	18	22	14	24	APHA(22nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.96	0.32	0.6	0.44	0.52	0.44	0.48	0.46	0.82	0.4	0.5	0.46	SOP – PLPL - 07
A	**Flora and Fauna**														
17	Primary productivity	mgC/L /day	3.06	1.9	2.925	0.675	2.475	0.9	1.575	0.225	1.35	0.563	1.575	0.675	APHA (22nd Edi) 10200-J

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B	**Phytoplankton**														
18.1	Chlorophyll	mg/m^3	4.2	3.2	2.62	0.64	2.723	0.107	1.148	0.107	1.6	0.187	1.89	0.16	APHA (22nd Edi) 10200-H
18.2	Phaeophytin	mg/m^3	BDL*	BDL*	BDL*	1.94	BDL*	2.472	0.459	1.837	0.36	1.757	0.067	1.69	APHA (22nd Edi) 10200-H
18.3	Cell Count	Unit x 10^3/L	218	180	338	88	304	35	196	24	175	29	162	33	APHA (22nd Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	Diatom	Diatom	Diatom	Diatom	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	APHA (22nd Edi) 10200-H
			Biddulphia sp.	*Biddulphia sp.*	*Biddulphia sp.*	*Cymbella sp.*	*Synedra sp.*	*Pleurosigma sp.*	*Asterionella sp.*	*Cocconeis sp.*	*Asterionella sp.*	*Coscinodiscus sp.*	*Asterionella sp.*	*Tabellaria sp.*	
			Nitzschia sp.	*Fragillaria sp.*	*Thalassionema sp.*	*Gyrosigna sp.*	*Biddulphia sp.*	*Navicula sp.*	*Biddulphia sp.*	*Pinnularia sp.*	*Biddulphia sp.*	*Fragillaria sp.*	*Coscinodiscus sp.*	*Navicula sp.*	
			Thalassiosira sp.	*Gyrosigma sp.*	*Fragillaria sp.*	*Nitzschia sp.*	*Nitzschia sp.*	*Skeletonema sp.*	*Coscinodiscus sp.*	*Gyro sigma sp.*	*Chaetoceros sp.*	*Navicula sp.*	*Navicula sp.*	*Gyrosigma sp.*	
			Fragillaria sp.	--	*Pleurosigma sp.*	*Biddulphia sp.*	*Fragillaria sp.*	*Pleurosigma sp.*	*Pinnularia sp.*	*Synedra sp.*	*Coscinodiscus sp.*	*Synedra sp.*	*Nitzschia sp.*	*Coscinodiscus sp.*	
			Pleurosigma sp.	--	Green algae	Green algae	*Cyclotella sp.*	--	*Skeletonema sp.*	Green Algae	*Gyro sigma sp.*	*Pinnularia sp.*	*Fragillaria sp.*	*Asterionella sp.*	
			--	--	*Chlorella sp.*	*Oscillatoria sp.*	Green Algae	--	Green Algae	*Spirogyra sp.*	Green Algae	Green Algae	*Surirella sp.*	Cyanophyceae	
			--	--	--	--	Pandorina sp.	--	Pediastrum sp.	*Volvox sp.*	Pandorina sp.	Chlorella sp.	*Thallasionema sp.*	*Oscillatoria sp.*	
			--	--	--	--	Ulothrix sp.	--	Chlorella sp.	--	Pediastrum sp.	--	Green Algae	*Nostoc sp.*	
			--	--	--	--	Volvox sp.	--	Cyanophyceae	--	Desmids	--	*Ankistrodesmus sp.*	--	
			--	--	--	--	--	--	Microcystis sp.	--	Cosmarium sp.	--	*Chlorella sp.*	--	
			--	--	--	--	--	--	Nostoc sp.	--	--	--	*Pandorina sp.*	--	
			--	--	--	--	--	--	--	--	--	--	Cyanophyceae	--	
			--	--	--	--	--	--	--	--	--	--	*Anabaena sp.*	--	
			--	--	--	--	--	--	--	--	--	--	*Oscillatoria sp.*	--	
C	**Zooplanktons**														
19	Abundance	no/m^2	310	198	440	210	230	160	130	20	183	67	267	133	APHA (22nd Edi)

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.1	(Population)														10200-G
19.2	Name of Group Number and name of group species of each group	--	*Hydrozoans*	*Amphipods*	*Hydrozoans*	*Amphipods*	Chaetognathes	Polychaete Worms	Decapods	Ostracods	Copepods	Decapods	Gastropods	Ctenophores	APHA (22nd Edi) 10200-G
			Anthrozoans	*Polychaetes*	*Anthrozoans*	*Polychaete worms*	Copepods	Decapods	Copepods	Lamellibranches	Krill	Ostracods	Copepods	Gastropods	
			Gastropods	--	*Gastropods*	*Decapods*	Krill	Copepods	Krill	Decapods	Polychaete Worms	Gastropods	Decapods	Krill	
			Foraminiferans	--	*Chaetognaths*	*Echinoderms*	Daphania	--	Ostracods	--	Molluscans	--	Ostracods	Nematodes	
			--	--	--	--	Isopods	--	Gastropods	--	--	--	Krill	--	
			--	--	--	--	--	--	--	--	--	--	Crustaceans	--	
			--	--	--	--	--	--	--	--	--	--	Cyclops	--	
19.3	Total Biomass	ml/100 m^3	32	10	84	29	56	12	43	7	38	10	75	15	APHA (22nd Edi) 10200-G
D	**Microbiological Parameters**														
20.1	Total Bacterial Count	CFU/ml	1613	1554	1710	1625	1820	1740	1810	1285	1880	1310	1850	1680	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22ndEdi)9221-D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Edi.2.4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-5)

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RESULTS OF SEDIMENT ANALYSIS [M4 JUNA BANDAR N 22°47'577" E 069°43'620"]

SR. NO.	TEST PARAMETERS	UNIT	April 2015	May 2015	June 2015	July 2015	August 2015	September 2015	Test Method
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.51	0.44	0.53	0.56	0.48	0.495	FCO:2007
2	Phosphorus as P	mg/kg	156	168	192	210	178	172	APHA(22nd Edi) 4500 C
3	Texture	--	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	**Heavy Metals**								
5.1	Aluminum as Al	%	5.6	5.3	5.06	5.12	5.22	5.21	AAS APHA 3111 B
5.2	Total Chromium as Cr^{+3}	mg/kg	118	146	174	190	158	127	AAS 3111B
5.3	Manganese as Mn	mg/kg	1020	920	1020	980	890	896	AAS APHA 3111 B
5.4	Iron as Fe	%	2.62	2.5	2.12	2.46	3.02	2.33	AAS APHA(22nd Edi)3111 B
5.5	Nickel as Ni	mg/kg	56	52	46	62	44	49.9	AAS APHA(22nd Edi)3111 B
5.6	Copper as Cu	mg/kg	42	58	38	44	54	45.9	AAS APHA(22nd Edi)3111 B
5.7	Zinc as Zn	mg/kg	158	174	190	200	186	179	AAS APHA(22nd Edi)3111 B
5.8	Lead as Pb	mg/kg	2.8	2.4	1.9	1.78	2.06	1.94	AAS APHA(22nd Edi)3111 B
5.9	Mercury as Hg	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Polychaete worms Snails Echinoderms	Polychaeteworms Decapods Amphipods Echinoderms	Polychaete Worms Bivalves Crabs Amphipods	Chaetognathes Bivalves Anthozoans	Amphipods Isopods Decapods Echinoderms Crabs	Polychaete worms Echinoderms Isopods Anthozoans	APHA (22nd Edi) 10500-C
6.2	MeioBenthos	--	Copepods Nematodes	Nematodes Copopods	Nematodes Hydrozoa	Nematodes Bryozoans Copepods	Nematodes	Namatodes Foraminiferans Hydrozoa	APHA (22nd Edi) 10500-C
2	Population	no/m^2	336	385	529	337	288	440	APHA (22nd Edi) 10500-C

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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 2015		May 2015		June 2015		July 2015		August 2015		September 2015		Test Method
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	7.95	8.1	8.02	8.15	8.15	8.3	8.22	8.42	8.14	8.28	8.08	8.14	IS3025(P11)83Re.02
2	Temperature	°C	31	32	29	30	30	30	27	28	29	30	28	29	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	12	14	10	16	18	21	26	34	20	32	26	30	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	BDL*	BDL*	BDL*	BDL*	BDL *	BDL *	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	IS 3025 (P44)1993Re.03 Edition2.1
5	Dissolved Oxygen	mg/L	5.4	4.6	5.6	4.4	6	5	5.6	4.8	5.4	4.8	5.4	4.6	IS3025(P38)89Re.99
6	Salinity	ppt	40.6	41.4	40.9	41.3	37.8	38.1	37.6	38	38.4	39.2	39.2	40.4	APHA (22nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	0.76	BDL*	0.32	BDL *	0.26	BDL*	0.44	BDL*	BDL*	BDL*	APHA(22nd Edi)5520D
8	Nitrate as NO_3	mg/L	0.72	0.78	0.42	0.46	0.56	0.62	0.5	0.56	0.44	0.5	0.518	0.607	IS3025(P34)88
9	Nitrite as NO_2	mg/L	0.056	0.044	0.02	0.014	0.034	0.024	0.022	0.02	0.024	0.038	0.036	0.025	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH_3	mg/L	0.28	0.4	0.21	0.34	0.44	0.6	0.54	0.84	0.38	0.46	0.48	0.619	IS3025(P34)88Cla.2.3
11	Phosphates as PO_4	mg/L	0.09	0.074	0.11	0.062	0.132	0.094	0.32	0.18	0.26	0.16	0.45	0.27	APHA(22nd Edi) 4500 C
12	Total Nitrogen	mg/L	1.8	2.4	0.55	0.53	0.13	0.82	1.08	1.4	0.86	0.998	1.034	1.251	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	2.2	BDL*	2.8	BDL*	0.914	1.244	0.502	0.618	0.416	0.72	0.42	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	48600	49690	47960	48340	47270	47780	46890	47560	47820	48360	45966	46874	IS3025(P16)84Re.02
15	COD	mg/L	12	14	18	24	12	16	14	18	16	20	9	24	APHA(22nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.64	0.44	0.56	0.44	0.62	0.48	0.52	0.48	0.54	0.5	0.5	0.42	SOP – PLPL - 07
A	**Flora and Fauna**														
17	Primary productivity	mgC/L /day	2.8	1.1	1.8	0.675	2.7	1.125	1.8	0.675	1.12	0.338	1.688	0.563	APHA (22nd Edi) 10200-J

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Lab Manager (Q)

B	**Phytoplankton**														
18.1	Chlorophyll	mg/m^3	4.4	4	1.44	0.56	3.124	0.267	1.469	0.134	1.7	0.721	1.362	0.294	APHA (22nd Edi) 10200-H
18.2	Phaeophytin	mg/m^3	BDL*	BDL*	1.13	2.11	BDL *	2.312	0.363	0.951	0.123	0.363	0.806	0.959	APHA (22nd Edi) 10200-H
18.3	Cell Count	Unit x 10^3/L	330	290	212	56	323	77	184	17	205	35	215	40	APHA (22nd Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	Green algae	Diatom	Green algae	Diatom	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	APHA (22nd Edi) 10200-H
			Pandorina sp.	*Rhilosoleniass sp.*	*Scenedesmus sp.*	*Navicula sp.*	*Biddulphia sp.*	*Thallasionema sp.*	*Gomphonema sp.*	*Navicula sp.*	*Thallasiosira sp*	*Nitzschia sp.*	*Rhizosolenia sp.*	*Nitzschia sp.*	
			Scenedesmus sp.	*Melosira sp.*	Diatom	*Fragillaria sp.*	*Cymbella sp.*	*Pinnularia sp.*	*Rhizosolenia sp.*	*Fragillaria sp.*	*Rhizosolenia sp.*	*Fragillaria sp.*	*Synedra sp.*	*Pinnularia sp.*	
			Diatom	*Navicula sp.*	*Nitzschia sp.*	*Pleurosigma sp.*	*Pleurosigma sp.*	*Rhizosolenia sp.*	*Synedra sp.*	*Pinnularia sp.*	*Pleurosigma sp.*	*Biddulphia sp.*	*Navicula sp.*	*Fragillaria sp.*	
			Nitzschia sp	--	*Navicula sp.*	Green algae	Cyanophyceae	Green Algae	*Nitzschia sp.*	Cyanophyceae	*Nitzschia sp.*	*Synedra sp.*	*Coscinodiscus sp.*	*Biddulphia sp.*	
			Coscinodiscus sp	--	*Coscinodiscus sp.*	*Chlorella sp.*	*Oscillatoria a sp.*	*Chlorella sp.*	*Coscinodiscus sp.*	*Chlorella sp.*	*Synedra sp.*	Green Algae	*Skeletonema sp.*	Cyanophyceae	
			Fragillaria sp.	--	*Fragillaria sp.*	--	*Spirulina sp.*	*Oedogonium sp.*	Green Algae	*Oscillatoria sp.*	*Coscinodiscus sp.*	*Chlorella sp.*	Green Algae	*Anabaena sp.*	
			--	--	*Acanthes sp.*	--	--	*Pandorina sp.*	Chlorella sp.	*Anabaena sp.*	*Green Algae*	*Pediastrum sp.*	*Spirogyra sp.*	*Nostoc sp.*	
			--	--	--	--	--	--	Pandorina sp.	--	*Pandorina sp.*	--	*Pediastrum sp.*	--	
			--	--	--	--	--	--	Spirogyra sp.	--	*Chlorella sp.*	--	*Hydrodictyon sp.*	--	
			--	--	--	--	--	--	--	--	*Cyanophyceae*	--	Desmids	--	
			--	--	--	--	--	--	--	--	*Nostoc sp.*	--	*Cosmarium sp.*	--	
C	**Zooplanktons**														
19.1	Abundance (Population)	no/m^2	560	280	250	180	290	110	160	40	150	80	260	60	APHA (22nd Edi) 10200-G
19.2	Name of Group Number and name of group species of each group	--	*Gastropods*	*Ostracods*	*Gastropods*	*Ostracods*	Copepods	Gastropods	Copepods	Gastropods	Copepods	Decapods	Copepods	Copepods	APHA (22nd Edi) 10200-G
			Nematodes	*Gastropods*	*Nematods*	*Polychaete worms*	Decapods	Polychaete Worms	Cyclops	Ctenophores	Molluscans	Bivalves	Cyclops	Polychaete worms	

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			Amphipods	--	*Chaetognaths*	*Snails*	Ostracods	--	Ostracods	Decapods	Ostracods	Nematodes	Decapods	Ostracods	
			Chaetognaths	--	--	--	Krill	--	Krill	--	Polychaete Worms	--	Krill	--	
			--	--	--	--	--	--	Polychaete Worms & Gastropods	--	--	--	Polychaete worms	--	
19.3	Total Biomass	ml/100 m^3	31	22	25	11	97	17	35	4	57	11	69	11	APHA (22nd Edi) 10200-G
D	**Microbiological Parameters**														
20.1	Total Bacterial Count	CFU/ml	1495	1318	1586	1227	1886	1430	1580	1140	1650	1390	1830	1630	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22ndEdi)9221-D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Edi.2.4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	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 2015	May 2015	June 2015	July 2015	August 2015	September 2015	Test Method
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1	Organic Matter	%	0.81	0.71	0.61	0.64	0.66	0.546	FCO:2007
2	Phosphorus as P	mg/kg	110	138	162	200	198	148	APHA(22nd Edi) 4500 C
3	Texture	--	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	**Heavy Metals**								
5.1	Aluminum as Al	%	6.8	6.2	5.7	5.2	5.4	5.39	AAS APHA 3111 B
5.2	Total Chromium as Cr^{+3}	mg/kg	110	98	114	128	118	131	AAS 3111B
5.3	Manganese as Mn	mg/kg	580	690	824	990	788	789	AAS APHA 3111 B
5.4	Iron as Fe	%	2.9	2.7	2.94	2.14	2.56	2.09	AAS APHA(22nd Edi)3111 B
5.5	Nickel as Ni	mg/kg	38	50.2	44.6	52.4	48.44	46.77	AAS APHA(22nd Edi)3111 B
5.6	Copper as Cu	mg/kg	64	44	32.8	40.2	36.68	36.39	AAS APHA(22nd Edi)3111 B
5.7	Zinc as Zn	mg/kg	140	153	174	210	196	161	AAS APHA(22nd Edi)3111 B
5.8	Lead as Pb	mg/kg	2.6	2.1	1.62	1.02	1.44	1.8	AAS APHA(22nd Edi)3111 B
5.9	Mercury as Hg	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Polychaete worms Snails Crustaceans	Polychaeteworms Crustaceans Echinoderms	Bivalves Isopods Mysids Polychaete Worms Anthozoans Lobsters	Amphipods Decapods Crustaceans Lobsters	Polychaete Worms Decapods Crustaceans Crabs	Crabs Mysids Decapods Bivalves Polychaete worms	APHA (22nd Edi) 10500-C
6.2	MeioBenthos	--	Foraminiferans Nematodes	Nematodes Forminiferans	Bryozoan Copepods Ciliates	Nematods Ostracodes Hydrozoa	Nematods Foraminiferans	Gastrotriches Ostracods	APHA (22nd Edi) 10500-C
2	Population	no/m^2	288	377	476	385	433	385	APHA (22nd Edi) 10500-C

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Lab Manager

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Lab Manager (Q)

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

SR. NO.	TEST PARAMETERS	UNIT	April 2015		May 2015		June 2015		July 2015		August 2015		September 2015		Test Method
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	8.07	8.17	8.15	8.17	8.05	8.18	8.19	8.23	7.95	8.14	8.1	8.18	IS3025(P11)83Re.02
2	Temperature	°C	31	32	30	31	29	30	28	29	28	29	29	30	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	14	21	20	26	14	18	18	24	16	22	18	22	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	BDL*	BDL*	BDL*	BDL*	BDL *	BDL *	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	IS 3025 (P44)1993Re.03Edition2.1
5	Dissolved Oxygen	mg/L	5.6	4.4	5.8	5	5.4	4.8	5.4	4.6	5.6	4.6	5.6	4.8	IS3025(P38)89Re.99
6	Salinity	ppt	37.5	38.4	38.6	39.2	38.1	38.6	37.8	38	37.8	38.3	38.1	39.2	APHA (22ndEdi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	0.44	BDL *	0.16	BDL*	0.12	BDL*	BDL*	BDL*	APHA(22ndEdi)5520D
8	Nitrate as NO_3	mg/L	0.58	0.84	0.68	0.79	0.36	0.48	0.48	0.62	0.52	0.78	0.681	0.784	IS3025(P34)88
9	Nitrite as NO_2	mg/L	0.066	0.052	0.023	0.018	0.014	0.026	0.022	0.03	0.046	0.032	0.063	0.05	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH_3	mg/L	0.18	0.32	0.11	0.28	0.32	0.58	0.34	0.46	0.26	0.5	0.295	0.554	IS3025(P34)88Cla.2.3
11	Phosphates as PO_4	mg/L	0.058	0.084	0.081	0.102	0.13	0.15	0.15	0.18	0.14	0.16	0.54	0.585	APHA(22ndEdi) 4500 C
12	Total Nitrogen	mg/L	1.6	2.7	0.81	1.1	0.69	1.08	0.86	1.12	0.826	1.32	1.039	1.189	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	1.8	BDL*	BDL*	BDL*	BDL*	BDL*	2.6	BDL*	2.4	BDL*	1.4	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	43621	44511	44860	45380	43660	44270	43880	44220	43860	44428	43186	43828	IS3025(P16)84Re.02
15	COD	mg/L	18	12	16	20	24	30	24	28	22	28	24	28	APHA(22ndEdi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.88	0.56	0.66	0.52	0.64	0.48	0.58	0.5	0.66	0.54	0.82	0.58	SOP – PLPL - 07
A	**Flora and Fauna**														
17	Primary productivity	mgC/L	4.0	2.6	2.25	1.12	2.25	0.675	2.02	0.9	1.68	0.113	1.35	0.45	APHA (22nd Edi)

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Dr. ArunBajpai
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		/day													10200-J
B	**Phytoplankton**														
18.1	Chlorophyll	mg/m^3	3.87	3.6	1.55	1.34	2.99	0.347	1.469	0.133	1.28	0.187	1.682	0.107	APHA (22nd Edi) 10200-H
18.2	Phaeophytin	mg/m^3	BDL*	BDL*	1.03	1.24	BDL*	2.232	0.849	2.44	1.03	2.39	0.598	2.02	APHA (22nd Edi) 10200-H
18.3	Cell Count	Unit x $10^3/L$	210	190	285	68	312	42	204	31	215	20	227	29	APHA (22nd Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	Diatom	Diatom	Diatom	Diatom	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	APHA (22nd Edi) 10200-H
			Thalassiasira sp.	*Biddulphia sp.*	*Thalassionema sp.*	*Biddulphia sp.*	*Nitzschia sp.*	*Fragillaria sp.*	*Nitzschia sp.*	*Fragillaria sp.*	Nitzschia sp.	Navicula sp.	*Nitzschia sp.*	*Navicula sp.*	
			Nitzschia sp.	*Navicula sp.*	*Nitzschia sp.*	*Fragillaria sp.*	*Fragillaria sp.*	*Coscinodiscus sp.*	*Fragillaria sp.*	*Biddulphia sp.*	Coscinodiscus sp.	Nitzschia sp.	*Synedra sp.*	*Fragillaria sp.*	
			Fragillaria sp.	*Melosira sp.*	*Fragillaria sp.*	*Cyclotella sp.*	*Pinnularia sp.*	*Pleurosigma sp.*	*Asterionella sp.*	*Pinnularia sp.*	Synedra sp.	Biddulphia sp.	*Coscinodiscus sp.*	*Cyclotella sp.*	
			Amphora sp.	--	*Coscinodiscus sp.*	--	*Coscinodiscus sp.*	Cyanophyceae	*Gyrosigma sp.*	*Thallasiosira sp.*	Pleurosigma sp.	Fragillaria sp.	*Pleurosigma sp.*	*Tabellaria sp.*	
			Green algae	--	Green algae	--	*Cymbella sp.*	*Oscillatoria sp.*	Green Algae	Green Algae	Navicula sp.	Skeletonema sp.	*Thallasiosira sp.*	Cyanophyceae	
			Pediastrum sp.	--	*Pediastrum sp.*	--	Green Algae	--	*Pandorina sp.*	*Pandorina sp.*	*Thallasiosira sp*	Pandorina sp.	*Pinnularia sp.*	*Oscillatoria sp.*	
					Cynophyceae		Ankistrodesmus sp.		*Spirogyra sp.*	*Pediastrum sp.*	Green Algae	Desmids	Green Algae	*Nostoc sp.*	
					Oscillatoria sp.		Pediastrum sp.		*Desmids*	*Volvox sp.*	Chlorella sp.		*Chlorella sp.*	Green Algae	
									Cosmarium sp.		Pandorina sp.		*Pandorina sp.*	*Chlorella sp.*	
											Cyanophyceae		*Ulothrix sp.*		
											Oscillatoria sp.		Desmids		
													Closterium sp.		
C	**Zooplanktons**														
19.1	Abundance (Population)	no/m^2	320	220	310	130	240	90	210	70	167	50	280	40	APHA (22nd Edi) 10200-G

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19.2	Name of Group Number and name of group species of each group	--	*Copepods*	*Bivalves*	*Copepods*	*Bivalves*	Gastropods	Polychaete Worms	Gastropods	Cyclops	*Gastropods*	*Molluscans*	Copepods	Copepods	APHA (22nd Edi) 10200-G
			Gastropods	*Copepods*	*Gastropods*	*Copepods*	Copepods	Bivalves	Copepods	Krill	*Bivalves*	*Platinelminthes*	Krill	Gastropods	
			Polychaetes	--	*Polychaete worms*	*Molluscans*	Mysids	Molluscans	Decapods	Ostracods	*Copepods*	*Ostracods*	Decapods	--	
			Fish larvae	--	*Decapods*	--	Ostracods	--	Polychaete Worms	*Copepods*	*Cyclops*	--	Crustaceans	--	
			--	--	--	--	Krill	--	Cyclops & Ctenophores	--	*Polychaete Worms*	--	Ostracods	--	
			--	--	--	--	--	--	--	--	--	--	Fish egg	--	
19.3	Total Biomass	ml/100 m^3	22	11	69	19	86	21	66	19	48	12	56	5	APHA (22nd Edi) 10200-G
D	**Microbiological Parameters**														
20.1	Total Bacterial Count	CFU/ml	2331	1895	2077	1981	2100	1850	2130	1620	2210	1870	1760	1580	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22ndEdi)9221-D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Edi. 2.4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-5)

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

SR. NO.	TEST PARAMETERS	UNIT	April 2015 SEDIMENT	May 2015 SEDIMENT	June 2015 SEDIMENT	July 2015 SEDIMENT	August 2015 SEDIMENT	September 2015 SEDIMENT	Test Method
1	Organic Matter	%	0.64	0.44	0.52	0.5	0.48	0.554	FCO:2007
2	Phosphorus as P	mg/kg	90	156	182	110	144	145	APHA(22nd Edi) 4500 C
3	Texture	--	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	**Heavy Metals**								
5.1	Aluminum as Al	%	5.4	5.8	5.24	5.86	5.36	5.71	AAS APHA 3111 B
5.2	Total Chromium as Cr^{+3}	mg/kg	128	112	129	142	136	137	AAS 3111B
5.3	Manganese as Mn	mg/kg	840	810	936	1020	960	919	AAS APHA 3111 B
5.4	Iron as Fe	%	2.6	2.5	2.8	2.92	2.74	2.25	AAS APHA(22nd Edi)3111 B
5.5	Nickel as Ni	mg/kg	28	41.6	32.4	36.4	38.7	34.35	AAS APHA(22nd Edi)3111 B
5.6	Copper as Cu	mg/kg	48	40	48.6	50.1	44.24	44.36	AAS APHA(22nd Edi)3111 B
5.7	Zinc as Zn	mg/kg	156	162	193	162	186	181	AAS APHA(22nd Edi)3111 B
5.8	Lead as Pb	mg/kg	2.7	2.5	1.96	1.22	1.38	1.07	AAS APHA(22nd Edi)3111 B
5.9	Mercury as Hg	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Crabs Snails Crustaceans	Bivalves Snails Crustaceans	Chaetognathes Decapods Bivalves Echinoderms	Echinoderms Decapods Bivalves Crabs Turbellaria	Echinoderms Bivalves Crab Isopods	Polychaete worms Echinoderms Isopods Decapods	APHA (22nd Edi) 10500-C
6.2	MeioBenthos	--	copepods Nematodes	Nematodes Copopods Ostracods	Ostracods Hydrozoa	Ostracods Foraminiferans Hydrozoa	Foraminiferans Copepods	Nematodes Copepods	APHA (22nd Edi) 10500-C
2	Population	no/m^2	251	314	411	357	397	377	APHA (22nd Edi) 10500-C

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POLLUCON LABORATORIES PVT. LTD. SURAT-3

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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 2015		May 2015		June 2015		July 2015		August 2015		September 2015		Test Method
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	7.9	8.03	7.95	8.05	7.9	8.01	7.85	7.98	7.82	8.1	8.04	8	IS3025(P11)83Re.02
2	Temperature	°C	30	31	30	30	28	29	29	30	29	30	28	29	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	16	22	18	20	12	14	18	22	14	16	16	20	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	IS 3025 (P44)1993Re.03 Edition2.1
5	Dissolved Oxygen	mg/L	5.8	4.6	6	4.8	5.2	4.6	5.4	4.8	5.6	4.6	5.4	4.6	IS3025(P38)89Re.99
6	Salinity	ppt	45.9	46.1	43.9	44.2	42.8	43.4	43.6	44.4	42.6	43.2	38.8	39.6	APHA (22nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22nd Edi)5520D
8	Nitrate as NO_3	mg/L	0.42	0.5	0.52	0.6	0.44	0.68	0.48	0.66	0.46	0.58	0.325	0.399	IS3025(P34)88
9	Nitrite as NO_2	mg/L	0.48	0.62	0.036	0.054	0.021	0.027	0.018	0.028	0.024	0.036	0.044	0.019	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH_3	mg/L	0.64	0.73	0.81	0.96	0.58	0.62	0.42	0.52	0.34	0.42	0.554	0.591	IS3025(P34)88Cla.2.3
11	Phosphates as PO_4	mg/L	0.038	0.062	BDL*	BDL*	0.12	0.16	0.14	0.18	0.14	0.16	0.495	0.585	APHA(22nd Edi) 4500 C
12	Total Nitrogen	mg/L	2.8	5.2	1.36	1.61	1.04	1.32	0.92	1.2	0.84	0.99	0.923	1.009	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	BDL*	BDL*	BDL*	BDL*	2.1	BDL*	1.8	BDL*	0.8	BDL*	1.2	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	54690	54980	52440	52980	53600	54100	51920	52890	53548	53990	42750	43320	IS3025(P16)84Re.02
15	COD	mg/L	16	26	24	32	24	26	20	24	18	22	24	28	APHA(22nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.72	0.52	0.6	0.43	0.72	0.32	0.68	0.44	0.7	0.58	0.54	0.62	SOP – PLPL - 07

H. T. Shah
Lab Manager

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Dr. ArunBajpai
Lab Manager (Q)

A	**Flora and Fauna**														
17	Primary productivity	mgC/L /day	2.92	1.06	2.475	0.99	2.925	0.45	2.47	1.125	1.463	0.337	1.463	0.113	APHA (22nd Edi) 10200-J
B	**Phytoplankton**														
18.1	Chlorophyll	mg/m^3	3.8	2.11	2.78	0.83	3.151	0.774	1.92	0.748	1.38	0.427	1.922	0.427	APHA (22^{nd}Edi) 10200-H
18.2	Phaeophytin	mg/m^3	BDL*	BDL*	BDL*	1.75	BDL*	1.805	0.395	1.98	0.742	1.42	0.021	1.479	APHA (22^{nd}Edi) 10200-H
18.3	Cell Count	Unit x $10^3/L$	308	220	306	143	358	95	294	75	189	28	202	33	APHA (22^{nd} Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	Diatom	Diatom	Diatom	Diatom	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	APHA (22^{nd} Edi) 10200-H
			Biddulphia sp.	*Melosira sp.*	*Biddulphia sp.*	*Biddulphia sp.*	*Nitzschia sp.*	*Navicula sp.*	*Nitzschia sp.*	*Fragillaria sp.*	*Coscinodiscus sp.*	*Coscinodiscus sp.*	*Asterionella sp.*	*Fragillaria sp.*	
			Pleurosigma sp.	*Biddulphia sp.*	*Pleurosigma sp.*	*Nitzschia sp.*	*Navicula sp.*	*Biddulphia sp.*	*Synedra sp.*	*Synedra sp.*	*Pinnularia sp.*	*Pinnularia sp.*	*Fragillaria sp.*	*Navicula sp.*	
			Nitzschia sp.	*Nitzschia sp.*	*Thalassionema sp.*	*Pleurosigma sp.*	*Rhizosolenia sp.*	*Thallasiosira sp.*	*Rhizosolenia sp.*	*Cyclotella sp.*	*Gyro sigma sp.*	*Nitzschia sp.*	*Navicula sp.*	*Nitzschia sp.*	
			Thalassiosira sp.	--	*Fragillaria sp.*	*Thalassionema sp.*	*Asterionella sp.*	Green Algae	*Coscinodiscus sp.*	*Cheatoceros sp.*	*Thallasiosira sp*	*Synedra sp.*	*Synedra sp.*	*Gyrosigma sp.*	
			Fragillaria sp.	--	Green algae	--	Synedra sp.	*Chlorella sp.*	*Biddulphia sp.*	Green Algae	*Navicula sp.*	*Skeletonema sp.*	*Coscinodiscus sp.*	Cyanophyceae	
			Melosira sp.	--	*Chlorella sp.*	--	*Cyclotella sp.*	*Scenedesmus sp.*	*Cocconeis sp.*	*Chlorella sp.*	Green Algae	Desmids	*Cymbella sp.*	*Oscillatoria sp.*	
			--	--	--	--	*Gyrosigma sp.*	--	*Skeletonema sp.*	*Hydrodictyon sp.*	Chlorella sp.	Cosmarium sp.	*Pleurosigma sp.*	Desmids	
			--	--	--	--	*Cyanophyceae*	--	*Green Algae*	*Spirogyra sp.*	Pandorina sp.	--	Cyanophyceae	*Closterium sp.*	
			--	--	--	--	*Oscillatoria sp.*	--	*Chlorella sp.*	--	Cyanophyceae	--	*Oscillatoria sp.*	--	
			--	--	--	--	*Spirulina sp.*	--	*Volvox sp.*	--	Oscillatoria sp.	--	*Nostoc sp.*	--	
			--	--	--	--	*Green Algae*	--	*Pandorina sp.*	--	--	--	Green Algae	--	
			--	--	--	--	*Chlorella sp.*	--	*Pediastrum sp.*	--	--	--	*Chlorella sp.*	--	
			--	--	--	--	*Volvox sp.*	--	--	--	--	--	*Pediastrum sp.*	--	
C	**Zooplanktons**														

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Lab Manager (Q)

19.1	Abundance (Population)	no/m^2	298	198	370	120	210	80	240	60	217	83	240	80	APHA (22nd Edi) 10200-G
19.2	Name of Group Number and name of group species of each group	--	*Echinoderms*	*Polychaete*	*Echinoderms*	*Polychaete worms*	Bivalves	Polychaete Worms	Decapods	Polychaete	Copepods	Molluscans	Nematodes	Polychaete worms	APHA (22nd Edi) 10200-G
			Copepods	*Bivalves*	*Copepods*	*Bivalves*	Nematodes	Copepods	Copepods	Lamellibranches	Decapods	Iospods	Copepods	Isopods	
			Isopods	--	*Isopods*	*Gastropods*	Gastropods	--	Ostracods	Gastropods	Polychaete Worms	Decapods	Krill	--	
			Gastropods	--	*Gastropods*	--	Mysids	--	Krill	Crustaceans	Gastropods	--	Molluscans	--	
			--	--	--	--	--	--	Ctenophores	--	Cyclops	--	--	--	
			--	--	--	--	--	--	Fish egg	--	--	--	--	--	
19.3	Total Biomass	ml/100 m^3	18	12	78	26	44	11	81	14	74	15	61	9	APHA (22nd Edi) 10200-G
D	**Microbiological Parameters**														
20.1	Total Bacterial Count	CFU/ml	1531	1677	1610	1740	1700	1880	1880	1522	1800	1390	1470	1110	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22ndEdi)9221-D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Edi.2.4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-5)

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POLLUCON LABORATORIES PVT. LTD. SURAT-3

Dr. ArunBajpai
Lab Manager (Q)

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

SR. NO.	TEST PARAMETERS	UNIT	April 2015 SEDIMENT	May 2015 SEDIMENT	June 2015 SEDIMENT	July 2015 SEDIMENT	August 2015 SEDIMENT	September 2015 SEDIMENT	Test Method
1	Organic Matter	%	0.59	0.44	0.64	0.4	0.62	0.441	FCO:2007
2	Phosphorus as P	mg/kg	134	160	240	190	210	187	APHA(22nd Edi) 4500 C
3	Texture	--	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	PLPL-TPH
5	**Heavy Metals**								
5.1	Aluminum as Al	%	5.4	5.1	4.9	5.26	5	5.59	AAS APHA 3111 B
5.2	Total Chromium as Cr^{+3}	mg/kg	84	92	104	80	98	99.98	AAS 3111B
5.3	Manganese as Mn	mg/kg	940	784	810	684	720	879	AAS APHA 3111 B
5.4	Iron as Fe	%	2.6	2.3	2.32	2.48	2.52	2.12	AAS APHA(22nd Edi)3111 B
5.5	Nickel as Ni	mg/kg	48	33	56	42	52	35.9	AAS APHA(22nd Edi)3111 B
5.6	Copper as Cu	mg/kg	56	48	52	50	58	45.9	AAS APHA(22nd Edi)3111 B
5.7	Zinc as Zn	mg/kg	172	156	172	150	166	1.62	AAS APHA(22nd Edi)3111 B
5.8	Lead as Pb	mg/kg	2.9	2.1	1.7	2	1.96	1.88	AAS APHA(22nd Edi)3111 B
5.9	Mercury as Hg	mg/kg	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
6	Benthic Organisms								
6.1	Macrobenthos	--	Snails Amphipods Polychaete worms Crabs	Bivalves Mysids Chaetognathes	Polychaete Worms Crabs Decapods Isopods	Polychaete Worms Bivalves Decapods Echinoderms	Polychaete Worms Bivalves Echinoderms Crabds Isopods	Polychaete worms Isopods Decapods Prawn	APHA (22nd Edi) 10500-C
6.2	MeioBenthos	--	Copepods Nematodes	Nematodes Copopods	Nematodes Foraminiferans Ciliates	Nematodes Foraminiferans Copepods	Nematods Foraminiferans	Namatodes Foraminiferans	APHA (22nd Edi) 10500-C
2	Population	no/m^2	503	481	485	433	337	433	APHA (22nd Edi) 10500-C

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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 2015		May 2015		June 2015		July 2015		August 2015		September 2015		Test Method
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	8.05	8.13	8.11	8.24	8.15	8.22	8.1	8.28	8.05	8.18	8	8.09	IS3025(P11)83Re.02
2	Temperature	°C	31	31	29	30	30	30	29	30	28	29	28	29	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	12	22	16	20	12	16	18	22	20	26	16	20	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	BDL*	BDL*	BDL*	BDL*	BDL *	BDL *	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	IS 3025 (P44)1993Re.03 Edition2.1
5	Dissolved Oxygen	mg/L	5.6	4.8	6	5.2	5.4	5	5.6	4.8	5.8	5	5.4	4.8	IS3025(P38)89Re.99
6	Salinity	ppt	42.7	44.1	42.4	42.9	40.6	41.1	43.8	44.6	41.2	42.5	39.6	40.2	APHA (22nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	0.6	BDL *	BDL*	BDL*	0.2	BDL*	0.4	BDL*	APHA(22nd Edi)5 520D
8	Nitrate as NO_3	mg/L	0.81	0.99	0.66	0.94	0.84	0.88	0.78	0.96	0.58	0.72	0.34	0.414	IS3025(P34)88
9	Nitrite as NO_2	mg/L	0.081	0.086	0.041	0.056	0.024	0.042	0.038	0.068	0.03	0.054	0.026	0.011	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH_3	mg/L	0.4	0.56	0.56	0.7	0.72	0.86	0.66	0.7	0.5	0.62	0.221	0.351	IS3025(P34)88Cla.2.3
11	Phosphates as PO_4	mg/L	0.056	0.077	0.096	0.11	0.11	0.13	0.092	0.1	0.088	0.096	0.495	0.63	APHA(22nd Edi) 4500 C
12	Total Nitrogen	mg/L	2.1	3.8	1.26	1.69	1.58	1.78	1.478	1.728	1.2	1.394	0.587	0.776	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	BDL*	BDL*	BDL*	BDL*	12.4	BDL*	8.6	BDL*	6.4	BDL*	6.2	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	52105	52640	51610	51740	50680	51120	53200	53880	51240	51630	46326	47880	IS3025(P16)84Re.02
15	COD	mg/L	24	28	18	24	26	30	20	28	16	22	9	19	APHA(22nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.98	0.38	0.72	0.48	0.54	0.32	0.64	0.4	0.48	0.66	0.55	0.43	SOP – PLPL - 07
A	**Flora and Fauna**														
17	Primary productivity	mgC/L /day	2.1	0.8	2.02	0.9	2.925	0.225	2.25	0.45	1.8	0.563	1.125	0.338	APHA (22nd Edi) 10200-J

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B	**Phytoplankton**														
18.1	Chlorophyll	mg/m^3	5.2	3.57	2.46	2.67	3.284	0.374	2.1	0.267	1.97	0.107	1.44	0.32	APHA (22nd Edi) 10200-H
18.2	Phaeophytin	mg/m^3	BDL*	BDL*	0.12	BDL*	BDL *	2.205	0.246	2.31	0.155	1.762	0.689	1.511	APHA (22nd Edi) 10200-H
18.3	Cell Count	Unit x 10^3/L	270	205	312	169	364	87	278	69	220	55	196	42	APHA (22nd Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	Diatom	Diatom	Diatom	Diatom	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	APHA (22nd Edi) 10200-H
			Gyrosigma sp.	*Fragillaria sp.*	*Gyrosigrea sp.*	*Fragillaria sp.*	*Rhizosolenia sp.*	*Biddulphia sp.*	*Fragillaria sp.*	*Nitzschia sp.*	*Asterionella sp.*	*Fragillaria sp.*	*Rhizosolenia sp.*	*Fragillaria sp.*	
			Navicula sp.	*Nitzschia sp.*	*Thalassionema sp.*	*Gyrosigna sp.*	*Skeletonema sp.*	*Pinnularia sp.*	*Rhizosolenia sp.*	*Melosira sp.*	*Nitzschia sp.*	*Nitzschia sp.*	*Nitzschia sp.*	*Nitzschia sp.*	
			Thalassiosira sp.	*Melosira sp.*	*Synedra sp.*	*Thalassionema sp.*	Synedra sp.	*Pleurosigma sp.*	*Nitzschia sp.*	*Pleurosigma sp.*	*Navicula sp.*	*Navicula sp.*	*Navicula sp.*	*Navicula sp.*	
			Synedra sp.	--	Green algae	--	Navicula sp.	Green Algae	*Synedra sp.*	*Cymbella sp.*	*Coscinodiscus sp.*	*Gyro sigma sp.*	*Coscinodiscus sp.*	*Gyrosigma sp.*	
			Green algae	--	*Spirogyra sp.*	--	*Cyanophyceae Navicula sp. Spirulina sp. Lyngbya sp.*	*Volvox sp.*	*Pleurosigma sp.*	Green Algae	*Pleurosigma sp.*	Cyanophyceae	*Pleurosigma sp.*	Green Algae	
			Spirogyra sp.	--	*Chlorella sp.*	--	Green Algae	--	Green Algae	*Chlorella sp.*	*Fragillaria sp.*	*Oscillatoria sp.*	*Thallasionema sp.*	*Chlorella sp.*	
			--	--	*Ankistrodesmus sp.*	--	Microcystis sp.	--	Chlorella sp.	*Pandorina sp.*	*Pinnularia sp.*	*Spirulina sp.*	Cyanophyceae	*Pandorina sp.*	
			--	--	--	--	Chlorella sp.	--	Pandorina sp.	--	*Green Algae*	--	*Oscillatoria sp.*	--	
			--	--	--	--	Pandorina sp.	--	Ulothrix sp.	--	*Ankistrodesmus sp.*	--	*Nostoc sp.*	--	
			--	--	--	--	--	--	Hydrodictyon sp.	--	*Chlorella sp.*	--	Green Algae	--	
			--	--	--	--	--	--	--	--	*Volvox sp.*	--	*Chlorella sp.*	--	
			--	--	--	--	--	--	--	--	*Hydrodictyon sp.*	--	*Pediastrum sp.*	--	
C	**Zooplanktons**														
19	Abundance	no/m^2	400	300	350	260	270	120	190	50	210	60	325	75	APHA (22nd Edi)

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.1	(Population)														10200-G
19.2	Name of Group Number and name of group species of each group	--	*Copepods*	*Decapod larvae*	*Copepods*	*Decapods*	Nematodes	Foraminiferans	Polychaete Worms	Foraminiferans	Copepods	Copepods	Polychaete worms	Copepods	APHA (22nd Edi) 10200-G
			Polychaetes	*Polychaetes*	*Polychaeworms*	*Polychaeworms*	--	Polychaete Worms	Decapods	Nematodes	Molluscans	Ostracods	Krill	Nematodes	
			Gastropods	*Ostracods*	*Gastropods*	*Ostracods*	--	--	Cyclops	Lamellibranches	Polychaete Worms	Crustaceans	Isopods	--	
			Foraminiferans	--	*Decapods*	--	--	--	Chaetognathes	--	Knill	--	Gastropods	--	
			Ctenophores	--	*Mysids*	--	--	--	Molluscans	--	Gastropods	--	--	--	
19.3	Total Biomass	ml/100 m^3	30	18	89	22	48	20	37	12	82	14	72	11	APHA (22nd Edi) 10200-G
D	**Microbiological Parameters**														
20.1	Total Bacterial Count	CFU/ml	1927	2177	2130	2410	2250	2500	1925	1350	1850	1430	1470	1180	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22ndEdi)9221-D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Edi.2.4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-5)

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

SR. NO.	TEST PARAMETERS	UNIT	April 2015		May 2015		June 2015		August 2015		September 2015		Test Method
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1	pH	--	7.99	8.11	8.06	8.17	8.1	8.13	8.14	8.2	7.99	8.05	IS3025(P11)83Re.02
2	Temperature	°C	30	31	29	30	29	30	29	30	29	30	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	16	21	14	18	22	28	18	26	20	26	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	IS 3025 (P44)1993Re.03Edition2.1
5	Dissolved Oxygen	mg/L	5.4	4.6	5.6	4.4	5.4	4.6	5.6	4.8	5.8	4.6	IS3025(P38)89Re.99
6	Salinity	ppt	41.4	41.8	41.6	42	39.8	40.4	40.2	41.8	39.6	40.1	APHA (22nd Edi) 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL *	BDL *	BDL*	BDL*	BDL*	BDL*	APHA(22nd Edi)5520 D
8	Nitrate as NO_3	mg/L	0.56	0.69	0.36	0.51	0.52	0.58	0.48	0.54	0.458	0.888	IS3025(P34)88
9	Nitrite as NO_2	mg/L	0.081	0.102	0.072	0.096	0.048	0.072	0.12	0.18	0.037	0.063	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH_3	mg/L	0.56	0.62	0.69	0.72	0.84	0.63	0.74	0.82	0.887	1.06	IS3025(P34)88Cla.2.3
11	Phosphates as PO_4	mg/L	0.094	0.098	0.14	0.16	0.18	0.2	0.16	0.18	0.585	0.675	APHA(22nd Edi) 4500 C
12	Total Nitrogen	mg/L	3.8	4.1	1.12	1.32	1.42	1.3	1.34	1.54	1.382	2.011	IS3025(P34)88
13	Petroleum Hydrocarbon	mg/L	4	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	1.56	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	49608	51210	48710	49810	47480	48120	48020	51308	47310	47738	IS3025(P16)84Re.02
15	COD	mg/L	18	24	24	31	18	20	16	20	24	28	APHA(22nd Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.76	0.42	0.46	0.3	0.49	0.24	0.68	0.4	0.52	0.32	SOP – PLPL - 07
A	**Flora and Fauna**												
17	Primary productivity	mgC/L/day	3.1	1.2	1.35	0.45	2.475	1.013	1.91	0.675	1.575	0.225	APHA (22nd Edi) 10200-J
B	**Phytoplankton**												
18.	Chlorophyll	mg/m^3	3.39	3.81	1.28	0.67	2.67	0.481	1.7	0.427	1.362	0.187	APHA (22nd Edi)

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1													10200-H
18.2	Phaeophytin	mg/m^3	BDL*	BDL*	1.3	1.91	BDL*	2.099	1.65	1.23	0.844	1.77	APHA (22nd Edi) 10200-H
18.3	Cell Count	Unit x 10^3/L	225	182	179	93	321	40	245	47	225	31	APHA (22nd Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	Diatom	Diatom	Diatom	Diatom	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	Bacillariophyceae	APHA (22nd Edi) 10200-H
			Coscinodiscus sp.	*Coscinodiscus sp.*	*Coscinodiscus sp.*	*Coscinodiscus sp.*	*Nitzschia sp.*	*Cymbella sp.*	*Gyro sigma sp.*	*Amphora sp.*	*Rhizosolenia sp.*	*Thallasionema sp.*	
			Melosira sp.	*Asterionalla sp.*	*Nitzschia sp.*	*Asterionella sp.*	*Gomphonema sp.*	*Nitzschia sp.*	*Pinnularia sp.*	*Coscinodiscus sp.*	*Nitzschia sp.*	*Fragillaria sp.*	
			Nitzschia sp.	*Navicula sp.*	*Synedra sp.*	*Navicula sp.*	*Pleurosigma sp*	*Synedra sp.*	*Synedra sp.*	*Navicula sp.*	*Navicula sp.*	*Synedra sp.*	
			Synedra sp.	Cyanophyceae	*Thalassionema sp.*	*Nitzschia sp.*	*Rhizosolenia sp.*	Green Algae	*Nitzschia sp.*	*Synedra sp.*	*Thallasionema sp.*	*Pleurosigma sp.*	
			Thalassiosira sp.	*Oscillatoria sp.*	*Biddulphia sp.*	--	Cyanophyceae	*Chlorella sp.*	*Thallasiosira sp*	*Fragillaria sp.*	*Coscinodiscus sp.*	*Asterionella sp.*	
			Biddulphia sp.	--	*Cynbella*	--	*Oscillatoria sp.*	--	*Pleurosigma sp.*	Green Algae	*Fragillaria sp.*	Cyanophyceae	
			--	--	--	--	*Desmids*	--	*Cyanophyceae*	Chlorella sp.	Cyanophyceae	*Oscillatoria sp.*	
			--	--	--	--	*Cosmarium sp.*	--	*Oscillatoria sp.*	Pandorina sp.	*Oscillatoria sp.*	Desmids	
			--	--	--	--	*Closterium sp.*	--	*Spirulina sp.*	Pediastrum sp.	*Nostoc sp.*	*Closterium sp.*	
			--	--	--	--		--	--	Green Algae	Green Algae	--	
			--	--	--	--		--	--	Chlorella sp.	*Chlorella sp.*	--	
			--	--	--	--		--	--	Volvox sp.	*Volvox sp.*	--	
C	**Zooplanktons**												
19.1	Abundance (Population)	no/m^2	620	460	480	280	210	130	250	100	280	150	APHA (22nd Edi) 10200-G
19.2	Name of Group Number and name of group species of each group	--	*Polychaetes*	*Bivalves*	*Polychaeteworms*	*Bivalves*	Nematodes	Polychaete Worms	Copepods	Copepods	Copepods	Isopods	APHA (22nd Edi) 10200-G
			Chaetognaths	*Snails*	*Chaetognaths*	*Isopods*	Gastropods	Bryozoans	Krill	Polychaete Worms	Decapods	Hydrozoans	
			Gastropods	*Molluscans*	*Gastropods*	*Hydrozoans*	Muds Skipper	Snail	Gastropods	Crustaceans	Nematodes	Namatodes	
			Bivalves	*Hydrozoans*	*Bivalves*	--	Bivalves	Hydrozoans	Decapods	--	Isopods	--	
			--	*Isopods*	*Decapods*	--	--	--	Polychaete Worms	--	Krill	--	

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									& Ostracods				
19.3	Total Biomass	ml/100 m^3	27	12	36	17	102	28	89	16	75	9	APHA (22nd Edi) 10200-G
D	**Microbiological Parameters**												
20.1	Total Bacterial Count	CFU/ml	2009	1927	2800	1825	2560	2240	1710	1280	1590	1320	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	APHA(22ndEdi)9221 -D
20.3	Ecoli	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS:1622:1981Edi.2. 4(2003-05)
20.4	Enterococcus	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 15186 :2002
20.5	Salmonella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-3)
20.6	Shigella	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 1887 (P-7)
20.7	Vibrio	/ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	IS : 5887 (P-5)

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RESULTS OF ETP WATER OUTLET

SR. NO.	PARAMETERS	UNIT	Liquid Terminal ETP Outlet						TEST METHOD
			April 2015	May 2015	June 2015	July 2015	August 2015	September 2015	
1	Colour	Co-pt	50	40	20	30	30	20	IS3025(P4)83Re.02
2	pH	--	6.7	7.1	6.56	6.92	7.08	7.17	IS3025(P11)83Re.02
3	Temperature	°C	32	31	30	30	30	30	IS3025(P9)84Re.02
4	Total Suspended Solids	mg/L	40	38	20	28	24	26	IS3025(P17)84Re.02
5	Total Dissolved Solids	mg/L	1890	1890	1562	1909	1960	2024	IS3025(P16)84Re.02
6	COD	mg/L	84	92	98	82	92	96	APHA(22nd Edi) 5520-D Open Reflux
7	BOD (3 Days @ 27 °C)	mg/L	30	26	28	18	20	24	IS 3025 (P44)1993Re.03Edition2.1
8	Chloride as Cl	mg/L	589	587	560	390	540	584	IS3025(P32)88Re.99
9	Oil & Grease	mg/L	0.8	0.4	BDL*	0.6	0.2	1	APHA(22nd Edi)5520D
10	Sulphate as SO_4	mg/L	174	160	150	220	190	167	APHA(22nd Edi)4500 SO_4 E
11	Ammonical Nitrogen as NH_3	mg/L	2.1	3.1	4.4	5.6	3	1.75	IS3025(P34)88Cla.2.3
12	% Sodium as Na	%	42	45.56	46.19	48.44	44.8	49.26	AAS APHA(22nd Edi) 3500 NA B/ Flame Photometer
13	Nickel as Ni	mg/L	0.014	BDL*	BDL*	BDL*	BDL*	0.018	AAS APHA(22nd Edi)3111 B
14	Phenolic Compound	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	IS3025(P43)92Re.03
15	SAR	--	4.6	6.02	5.4	5.8	BDL*	8.88	By Calculation
16	Total Chromium as Cr^{+3}	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS 3111B
17	Hexavalent Chromium as Cr^{+6}	mg/L	BDL*	BDL*	0.018	BDL*	BDL*	BDL*	APHA(22nd Edi)3500Cr B Colorimetric method
18	Copper as Cu	mg/L	0.018	0.011	BDL*	0.012	0.01	0.01	AAS APHA(22nd Edi)3111 B
19	Lead as Pb	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA(22nd Edi)3111 B
20	Sulphide as S	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22nd Edi) 4500-S
21	Mercury as Hg	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA- 3112 B
22	Zinc as Zn	mg/L	0.066	0.031	0.026	0.042	0.03	0.024	AAS APHA(22nd Edi)3111 B
23	Cadmium as Cd	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA(22nd Edi)3111 B
24	Cyanide as CN	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	APHA(22nd Edi)4500CN E
25	Arsenic as As	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	AAS APHA 3114 B
26	Fluoride as F	mg/L	0.72	0.8	0.62	0.74	0.66	BDL*	APHA(22nd Edi) 4500 F D SPANDS
27	Insecticides/Pesticides	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	GC MS

*Below detection limit

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RESULT OF AMBIENT AIR QUALITY MONITORING

Location & Parameter	Unit	April 2015	May 2015	June 2015	July 2015	August 2015	September 2015	Test Method
T1 TERMINAL								
Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	75.26	72.81	76.16	79.38	82.88	75.96	IS:5182(P23):Gravimetric CPCB - Method (Vol.I,May-2011)
Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	41.80	36.60	41.73	40.87	40.29	38.96	Gravimetric- CPCB - Method (Vol.I,May-2011)
Sulphur Dioxide as SO_2	$\mu g/m^3$	14.27	15.20	15.32	15.45	14.66	11.62	IS:5182(PII):Improved West and Gaeke
Oxides of Nitrogen as NO_2	$\mu g/m^3$	32.09	33.41	34.85	33.22	33.14	30.58	IS:5182(PVI): Jacob & Hochheiser modified (NaOH-NaAsO2) Method
Carbon Monoxide as CO	mg/m^3	0.45	0.51	0.55	0.53	0.51	0.44	NDIR Digital Gas Analyzer
Hydrocarbon as CH_4	mg/m^3	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	SOP: HC: GC/GCMS/Gas analyzer
Benzene as C_6H_6	$\mu g/m^3$	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	IS 5182 (Part XI):2006/CPCB Method
NEAR FIRE STATION								
Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	67.94	70.59	75.37	86.26	85.74	80.70	IS:5182(P23):Gravimetric CPCB - Method (Vol.I,May-2011)
Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	39.10	35.73	40.87	46.72	44.57	41.56	Gravimetric- CPCB - Method (Vol.I,May-2011)
Sulphur Dioxide as SO_2	$\mu g/m^3$	17.40	18.77	18.84	19.35	17.37	15.52	IS:5182(PII):Improved West and Gaeke
Oxides of Nitrogen as NO_2	$\mu g/m^3$	31.13	34.23	34.21	34.67	34.31	32.53	IS:5182(PVI): Jacob & Hochheiser modified (NaOH-NaAsO2) Method
Carbon Monoxide as CO	mg/m^3	0.27	0.30	0.32	0.35	0.32	0.33	NDIR Digital Gas Analyzer
Hydrocarbon as CH_4	mg/m^3	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	SOP: HC: GC/GCMS/Gas analyzer
Benzene as C_6H_6	$\mu g/m^3$	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	IS 5182 (Part XI):2006/CPCB Method
PUB /ADANI HOUSE								
Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	67.29	68.65	62.39	70.67	68.94	67.06	IS:5182(P23):Gravimetric CPCB - Method (Vol.I,May-2011)
Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	39.34	36.37	29.82	33.80	31.35	30.89	Gravimetric- CPCB - Method (Vol.I,May-2011)
Sulphur Dioxide as SO_2	$\mu g/m^3$	14.54	15.30	17.00	16.95	16.68	12.08	IS:5182(PII):Improved West and Gaeke
Oxides of Nitrogen as NO_2	$\mu g/m^3$	29.05	31.77	31.45	29.89	29.83	28.03	IS:5182(PVI): Jacob & Hochheiser modified (NaOH-NaAsO2) Method
Carbon Monoxide as CO	mg/m^3	0.37	0.44	0.42	0.40	0.40	0.42	NDIR Digital Gas Analyzer
Hydrocarbon as CH_4	mg/m^3	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	SOP: HC: GC/GCMS/Gas analyzer
Benzene as C_6H_6	$\mu g/m^3$	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	IS 5182 (Part XI):2006/CPCB Method

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RESULT OF AMBIENT AIR QUALITY MONITORING

Location & Parameter	Unit	April 2015	May 2015	June 2015	July 2015	August 2015	September 2015	Test Method
AIR STRIP								
Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	71.09	71.08	65.95	69.93	70.38	69.70	IS:5182(P23):Gravimetric CPCB - Method (Vol.I,May-2011)
Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	33.14	35.41	30.67	31.55	30.69	29.85	Gravimetric- CPCB - Method (Vol.I,May-2011)
Sulphur Dioxide as SO_2	$\mu g/m^3$	13.19	14.08	12.28	12.21	13.98	11.70	IS:5182(PII):Improved West and Gaeke
Oxides of Nitrogen as NO_2	$\mu g/m^3$	29.83	31.34	28.26	28.06	29.70	27.84	IS:5182(PVI): Jacob & Hochheiser modified (NaOH-NaAsO2) Method
Carbon Monoxide as CO	mg/m^3	0.29	0.24	0.24	0.26	0.27	0.26	NDIR Digital Gas Analyzer
Hydrocarbon as CH_4	mg/m^3	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	SOP: HC: GC/GCMS/Gas analyzer
Benzene as C_6H_6	$\mu g/m^3$	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	IS 5182 (Part XI):2006/CPCB Method
NEAR SHANTIVAN COLONY'S STP								
Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	62.36	63.99	58.03	64.40	62.50	67.60	IS:5182(P23):Gravimetric CPCB - Method (Vol.I,May-2011)
Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	33.13	32.74	28.50	32.12	31.60	32.27	Gravimetric- CPCB - Method (Vol.I,May-2011)
Sulphur Dioxide as SO_2	$\mu g/m^3$	12.61	13.56	13.09	16.63	14.03	14.31	IS:5182(PII):Improved West and Gaeke
Oxides of Nitrogen as NO_2	$\mu g/m^3$	28.60	26.92	29.13	29.87	28.02	29.29	IS:5182(PVI): Jacob & Hochheiser modified (NaOH-NaAsO2) Method

Note: Monthly average is calculated from result of 24 hourly &twice in a week monitoring.

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RESULTS OF NATIONAL AMBIENT AIR QUALITY MONITORING

WEST PORT		T1 TERMINAL	NEAR FIRE STATION	PUB /ADANI HOUSE	AIR STRIP	NEAR SHANTIVAN COLONY'S STP	METHOD OF MEASUREMENT
TEST PARAMETER	**UNIT**	**08/04/2015**	**08/04/2015**	**08/04/2015**	**09/04/2015**	**07/04/2015**	
Respirable Particulate Matter (PM10)	µg/m^3	92.92	78.82	55.50	73.11	57.50	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)
Particulate Matter (PM 2.5)	µg/m^3	51.45	45.03	44.14	35.54	36.23	Gravimetric- CPCB - Method (Vol.I,May-2011)
Lead as Pb	µg/m^3	BDL*	BDL*	BDL*	BDL*	BDL*	CPCB Method (Vol.I,May-2011)
Benzo (a) Pyrene (BaP)-particulate phase only	ng/m^3	BDL*	BDL*	BDL*	BDL*	BDL*	CPCB Method (Vol.I,May-2011)
Arsenic as As	ng/m^3	BDL*	BDL*	BDL*	BDL*	BDL*	CPCB Method (Vol.I,May-2011)
Nickel as Ni	ng/m^3	BDL*	BDL*	BDL*	BDL*	BDL*	CPCB Method (Vol.I,May-2011)
Carbon Monoxide as CO	mg/m^3	0.34	0.16	0.44	0.34	0.48	NDIR Digital Gas Analyzer
Benzene as C_6H_6	µg/m^3	BDL*	2.16	BDL*	BDL*	BDL*	IS 5182 (Part XI):2006/CPCB Method
Ammonia (NH3)	µg/m^3	46.54	28.44	34.53	44.73	25.52	CPCB Method (Vol.I,May-2011)
Sulphur Dioxide (SO_2)	µg/m^3	15.34	19.70	16.70	10.68	12.52	IS:5182(Part 2): Improved West and Gaeke
Oxides of Nitrogen (NO_2)	µg/m^3	41.36	30.20	36.41	24.54	26.48	IS:5182(Part 6):Modified Jacob & Hochheiser (Na-Arsenite)
Ozone as O_3	µg/m^3	21.47	25.38	22.35	19.52	18.08	IS 5182 (PART IX) 1974 / CPCB Method (Vol.I,May-2011)
Hydrocarbon as CH4	ppm	BDL*	BDL*	BDL*	BDL*	BDL*	SOP: HC: GC/GCMS/Gas analyzer

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RESULTS OF NATIONAL AMBIENT AIR QUALITY MONITORING

WEST PORT		T1 TERMINAL	NEAR FIRE STATION	PUB /ADANI HOUSE	AIR STRIP	NEAR SHANTIVAN COLONY'S STP	METHOD OF MEASUREMENT
TEST PARAMETER	**UNIT**	**17/07/2015**	**17/07/2015**	**17/07/2015**	**18/07/2015**	**16/07/2015**	
Respirable Particulate Matter (PM10)	$\mu g/m^3$	86.63	79.63	54.89	67.47	62.63	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)
Particulate Matter (PM 2.5)	$\mu g/m^3$	48.54	32.52	24.57	27.60	39.14	Gravimetric- CPCB - Method (Vol.I,May-2011)
Lead as Pb	$\mu g/m^3$	BDL*	BDL*	BDL*	BDL*	BDL*	CPCB Method (Vol.I,May-2011)
Benzo (a) Pyrene (BaP)-particulate phase only	ng/m^3	BDL*	BDL*	BDL*	BDL*	BDL*	CPCB Method (Vol.I,May-2011)
Arsenic as As	ng/m^3	BDL*	BDL*	BDL*	BDL*	BDL*	CPCB Method (Vol.I,May-2011)
Nickel as Ni	ng/m^3	BDL*	BDL*	BDL*	BDL*	BDL*	CPCB Method (Vol.I,May-2011)
Carbon Monoxide as CO	mg/m^3	0.70	0.46	0.58	0.41	0.60	NDIR Digital Gas Analyzer
Benzene as C_6H_6	$\mu g/m^3$	BDL*	BDL*	BDL*	BDL*	BDL*	IS 5182 (Part XI):2006/CPCB Method
Ammonia (NH3)	$\mu g/m^3$	58.51	36.39	46.74	40.63	21.69	CPCB Method (Vol.I,May-2011)
Sulphur Dioxide (SO_2)	$\mu g/m^3$	18.80	11.23	22.78	13.73	13.58	IS:5182(Part 2): Improved West and Gaeke
Oxides of Nitrogen (NO_2)	$\mu g/m^3$	41.66	36.46	39.52	30.42	35.36	IS:5182(Part 6):Modified Jacob & Hochheiser (Na-Arsenite)
Ozone as O_3	$\mu g/m^3$	24.50	28.39	26.58	21.72	21.48	IS 5182 (PART IX) 1974 / CPCB Method (Vol.I,May-2011)
Hydrocarbon as CH4	ppm	BDL*	BDL*	BDL*	BDL*	BDL*	SOP: HC: GC/GCMS/Gas analyzer

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RESULT OF STACK MONITORING

SR. NO.	TEST PARAMETERS	Unit	#Thermic Fluid Heater (Bitumen)	#Hot Water System-1 (Liquid Terminal)	#Hot Water System-2 (Liquid Terminal)	Test Method
April 2015						
1	Particulate Matter	mg/Nm^3	28.58	42.53	36.58	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	4.68	7.42	8.34	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	28.52	32.76	26.54	IS:11255 (Part-VII):2005
May 2015						
1	Particulate Matter	mg/Nm^3	41.62	35.58	28.45	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	6.64	8.65	5.36	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	31.33	34.74	29.05	IS:11255 (Part-VII):2005
June 2015						
1	Particulate Matter	mg/Nm^3	32.75	44.56	36.74	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	7.67	6.67	8.61	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	35.60	32.56	37.80	IS:11255 (Part-VII):2005
August 2015						
1	Particulate Matter	mg/Nm^3	--	26.80	30.61	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	--	8.74	6.28	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	--	38.56	35.70	IS:11255 (Part-VII):2005
September 2015						
1	Particulate Matter	mg/Nm^3	--	18.93	24.51	IS:11255 (Part-I):1985
2	Sulfur dioxide	ppm	--	6.83	5.55	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	--	36.24	32.85	IS:11255 (Part-VII):2005

*Below detection limit

Results on 11 % O_2 Correction when Oxygen is greater than 11 %

H. T. Shah
Lab Manager

POLLUCON LABORATORIES PVT. LTD. SURAT-3

Dr. ArunBajpai
Lab Manager (Q)

RESULT OF DG STACK MONITORING

April 2015								
SR. NO.	**TEST PARAMETERS**	**Unit**	**D.G. Set-1* (500 KVA)**	**D.G. Set-2* (500 KVA)**	**D.G. Set-3* (500 KVA)**	**D.G. Set-4* (500 KVA)**	**D.G. Set-5* (500 KVA)**	**Test Method**
1	Particulate Matter	mg/Nm^3	24.58	32.59	29.84	21.53	36.57	IS:11255 (Part-I):1985
2	Sulphur Dioxide	ppm	5.86	7.85	4.34	6.74	7.5	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	24.4	26.38	34.04	30.54	32.23	IS:11255 (Part-VII):2005
July 2015								
SR. NO.	**TEST PARAMETERS**	**Unit**	**D.G. Set-1* (500 KVA)**	**D.G. Set-2* (500 KVA)**	**D.G. Set-3* (500 KVA)**	**D.G. Set-4* (500 KVA)**	**D.G. Set-5* (500 KVA)**	**Test Method**
1	Particulate Matter	mg/Nm^3	16.44	38.51	33.75	30.18	26.66	IS:11255 (Part-I):1985
2	Sulphur Dioxide	ppm	4.75	5.83	7.8	9.56	5.23	IS:11255 (Part-II):1985
3	Oxides of Nitrogen	ppm	28.85	26.63	30.51	35.2	29.62	IS:11255 (Part-VII):2005

*DG sets are used as standby, so stack monitoring is done on quarterly basis.

Results on 11 % O_2 Correction when Oxygen is greater than 11 %

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MINIMUM DETECTION LIMIT [MDL]

Water parameter(mg/L)

Sr. No.	Test parameter	MDL
1	Total Suspended Solids	1
2	Oil & Grease	1
3	BOD	10
4	COD	5
6	Total Dissolved Solids	3
7	Sulphate	0.3
8	Ammonical Nitrogen	0.05
9	Nickel	0.01
10	Phenolic Compound	0.001
11	Fluoride	0.01
12	Copper	0.013
13	Sulphide	0.01
15	Cyanide	0.0001
16	Residual Chlorine	0.1
17	Boron	0.02
17	Insecticides/Pesticides	0.01
19	Nitrate Nitrogen	0.15
20	Phosphorous	0.15
21	Petroleum Hydrocarbon	0.01
22	Lead	0.005
23	Mercury	0.0005
24	Zinc	0.022
25	Cadmium	0.001
26	Arsenic	0.00015
Sediment parameter(mg/kg)		
1	Petroleum Hydrocarbon	0.2

Stack parameter		
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

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MINIMUM DETECTION LIMIT [MDL]

Ambient Air Parameter		
Sr. No.	**Test parameter**	**MDL**
1	Particulate Matter (PM10)	10
2	Particulate Matter (PM 2.5)	10
3	Lead as Pb ($\mu g/m^3$)	0.5
4	Benzo (a) Pyrene (BaP)- particulate phase only(ng/m^3)	0.5
5	Arsenic as As (ng/m^3)	2
6	Nickel as Ni (ng/m^3)	10
7	Carbon Monoxide as CO (mg/m^3)	1
8	Benzene as C_6H_6 ($\mu g/m^3$)	2
9	Ammonia (NH_3) ($\mu g/m^3$)	10
10	Sulphur Dioxide (SO_2) ($\mu g/m^3$)	5
11	Nitrogen Dioxide (NO_2) ($\mu g/m^3$)	5
12	Ozone as O_3 ($\mu g/m^3$)	5
13	Hydrocarbon ($\mu g/m^3$)	150

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Annexure – 2

Section 7: Data Directory

INITIAL OIL SPILL REPORT		ANNEXURE 1
Particulars of person, office reporting	CAPT. SANSAR CHAUBE , HOD MARINE APSEZ MUNDRA	
Tel No.	9925223674	
Date & time of incident	29.05.2015	
Spill location	1 NM NW of IOCL SPM	
Likely cause of spill	CARGO HOSE BURST	Witness –Tanker Seaman
Initial response action	Stopped pumping and valve closed	By- bunker barge
Any other information	Spillage is stopped	

This FIR is to be sent to Marine Manager by fastest means of communication possible. It is an offence not to report oil pollution incident.

This FIR is to be followed by company's incident report also.

Following POLREP report to the Government through nearest CG information will also be required:

Identity of informant	GM MARINE (APSEZ)
Time of FIR	29 / 1000 HRS
Source of spill	CARGO LINE (HOSE)
Cause of spill	Hose burst
Type of spill	Crude Oil
Colour code information (from CG)	Brown
Radius of slick	300 mtr
Tail	600 mtr
Volume	3.6 m3 approx
Quantity	4.5 Ton Appx
Weather	NW'ly x 16-18 knts
Tide / current	Flooding / 1 knt
Density	
Layer thickness	2.5 mm approx.
Air / Sea temp.	32 C / 27 C
Predicted slick movement	Easterly
Size of spill classification (Tier 1, 2 or 3)	Tier 1

POLREP **ANNEXURE 2**

In case of an oil spill, MPSEZ will provide information to Commandant Coast Guard District 1 Porbandar COMDIS 1 and Coast Guard Station Vadinar CGS Vadinar in the following format:

SN.	Parameter	Data
1.	Identity of the informant	Capt Sansar Chaube
2.	Time of information receipt	29/1115
3.	Source of Spill	BUNKERING LINE (HOSE)
4.	Cause of Spill	Hose burst
5.	Type of oil	HSD
6.	Colour code information	Brown
7.	Configuration	Circular
8.	Radius	300 mts
9.	Tail	600 mts
10.	Volume	3.6 m3
11.	Quantity	4.5 Ton Appx
12.	Weathered or Fresh	fresh
13.	Density	@15^0 C 0.8271
14.	Viscosity	
15.	Wind	NW'ly x 16-18 knts
16.	Wave Height	0.5 mtr
17.	Current	1 knt
18.	Layer Thickness	2.5 mm approx.
19.	Ambient air temperature	32 c
20.	Ambient sea temperature	27 c
21.	Predicted slick movement	Easterly x 0.5 knts
22.	Confirm Classification of spill size	Tier 1

Page Number: 1 of 1	**Date: 29.05.2015**
Name: Santosh Ojha	**Position: Radio Officer**
Contact Number: 8758896747	**Signature:**

Time	**Activity Completed:**
1000	Oil Spill reported near 1 mile NW of IOCL SPM
1002	Informed to HOD/ HOS Marine.
1005	SPM vessel informed to stop cargo operation and close all valves
1014	Informed to IOCL terminal.
1025	Dol 11 cast off from anchor.
1023	Dol 8 and Dol 16 casted off from Tug Berth.
1036	Dol 11 reported reached in area
1040	Dol 11 started lowering Candyine Fence Boom
1055	Dol 11 Canadyine Fence boom rigged and Skimmer lowered and commenced cleaning up operation
1130	Dol 11 reported continue recovering oil through skimmer
1145	Dol 11 reported recovered 8.10 m3 of oil spill
1200	Oil spillage is under control all normal
1215	Drill Called off

Annexure – 3

Contents

Education

- **M-KEN Project** : The main aim of this pilot project is to provide quality education in the primary schools of Mundra block with help of Education Volunteers. We have total 28 Education Volunteers and 10 Community Mobilizers for 26 Government Schools of Mundra Taluka.
- **Disha Project** : Under this Programme, the students of Class 9th to 12th are guided to give them proper director towards progress. The students pass through a process of 3 hours that emphasizes on psychometric aptitude and career counseling
- **Scinece & Maths on Wheel** :This Programme is aimed at removing the fear of subjects like Math Science and including curiosity in them for the same. The models of Math and Science are displayed in a small vehicle such as a Van. This van remains in the school for 3 hours and provides relevant guidance.
- **Parvarish Project** : It is Five days Residential camp for High Schools Students. Topics like Communication, Mind Power, Team Management, Leadership and other Soft Skills are the mainly focused activities of the Camp
- **Saara Samachar** : The Significance of this programme lies in developing a positive attitude in the society. This news paper contains the smallest of the inspirational events of Mundra and the surrounding areas. The newspaper is published once in every two months. The purpose behind publishing the newspaper rests upon the ideal that if one gets to know about something good.

Education

Sr No	Project Name	No of School	No of Students	Level of Students
1	M-KEN Project	27	7582	1st to 8th
2	Disha Project	21	2797	9th to 12th
3	SOW and Math Fair	35	2524	5th to 8th
4	Parvarish Project	16	300	9th to 12th
5	Material support to Govt School	105	2245	1st and 9th to 12th

Education Initiatives : Overview

Adani Vidhya Mandir Bhadreshwar : Shaping Lives

- Quiz competition of Learning delight & Second semester exam in April 2015.
- Teachers of Navchetan Vidyalaya Visited School. & Interaction in April 2015.
- Remedial classes for Std.- 6,7, & 8 started from 22nd April 2015.
- Std.9th permission granted. (new secondary school.)
- Distribution of Uniform , Notebooks & Textbooks in June 2015.
- Environment Day Celebration on 13th June 2015. and " International Yoga day Celebration" on 19th & 20th June 2015.
- Demonstrated about Solar System through Sun & Moon by PPT.
- Parents Meeting for Std.:- 8 & 9 in August
- Celebration of Anand Mela by all students
- Adani foundation & D.E.O. Office Bhuj (Kutch) , organized "Education quality improvement workshop" on 12th August 2015.
- 69th Independence day Celebration
- Celebration of Sports Day on 25th August 2015.
- Rakhi Making Competition in August 2015.
- Demonstrated about "force & Speed" through the game Carom board to the Students of Std.-09 Sub.
- International Ozone day celebration
- Teachers & Students of Std:-5,6,7,8,9 participated in " Swachhta Abhyan Karyakram" organized
- During science week demonstrated the students of Std:-09 about experiments in the laboratory
- Students gave speech & Exhibition on "Gandhi Jayanti".
- School internal examination From 28th September to 03rd October 2015.

Adani Vidhya Mandir Bhadreshwar : Shaping Lives

Community Health : Mundra

Mobile dispensary and Rural Clinic New initiative Pathological instant test kits

1. Malaria antigen card(for malaria detection in blood)
2. Uristix strip (for urine sugar and protein detection)
3.Urine pregnancy test card.

Initiating Public Partnership

we have received room facility for our mobile van OPD at Pratappar, N. Bhujpur, M. Khakhar, Sadau, Chhasara, Hamiramora and Gundala villages.

Dialysis Support

9 beneficiaries have been receiving support 4 patient weekly 2 dialysis and 2 patient weekly 3 Dialysis, 1 patient weekly 1 Dialysis. (283 times)

Malnourishment Camp

We have organised six medical examination-Mal nourishment camps. Total 56 children benefited and now only 11 remained under malnourishment.

Poor Patient Support

204 Poor Patients have been extended financial support for treatment

Physiotherapy Camps for CP Children

We have started physiotherapy service to disabled children in coordination with BRC-Mundra. total 11 children identified & they receive physiotherapy weekly at our hospital.

- **Mobile Dispensaries & Rural Clinics**

During this month, total 34740 patients were provided with free Health Care Services by Mobile Dispensaries. 33647 patients benefitted by the medical services at Rural Clinics.

- **Health Cards to Senior Citizens**

During the month, total 9546 transactions were done out of 7380 card holders by beneficiaries Sr. Citizens of 65 Villages Mundra Taluka and they received cash less medical services Under this project.

Awareness Generation session

- **Dr. Jagruti Patel in Samaghogha Village "Women Health". Total 30 women participated in it.**
- **Awareness Generation session by Dr. Jagruti Patel in ICDS Unit Mundra "Women Health".**
- **We had organised a seminar on "woman health awareness and world population day"' in collaboration with ICDS and Taluka Health Office.**
- **Awareness Generation session by Dr. Goswami in Adani Hospital for "Child Health Care". Total 25 women, Child, Anganwadi worker participated in it.**
- **Personal Sanitation & Higgin Awareness Session By Dr. Piludiya in Navinal High School for Total 61 Student participated in it.**

Community Health : Mundra Overview

Health : Senior Citizen Project

Sr.Citizen Card Distribution

Old Village:- 36	New Village:-29	Total villages :-65
Green Card:- 4293	Green Card:- 2051	Total Green cards :- 6344
Blue Card:- 581	Blue Card:- 209	Total Blue cards :- 790
Total Card:- 4874	Total Card:- 2260	Total Cards :- 7134

2nd Phase New 29 Villages Added Total 65 Villages Covered

GAIMS : Health is Wealth ....

- **Smooth coordination between Adani foundation staff and Hospital staff by introduction of various department as well as doctors. During Six Months Patients Special Care and Coordination. Hospital Level both are Lab, OPD Department, Ward and Pharmacy Service Regarding.**
- **Death Body Carrier Van Service Start on 6 May 2015, During Six months total dead body to farther Different places put in Kutch District**
- **Total Health Camps organized in different Villages. Total No of Beneficiaries**
- **GAIMS AF Staff has initiated to synchronize with Sarpanch, Grampanchayt members, Leaders and local stakeholders. During this Period Total Village Level Meeting organized with Sarpanch, Leader, Women Groups and other Stakeholders . We had discussion of Hospital Services and Initiatives of Adani Foundation**

Fisherman Amenities

- As Education initiative for children at Balwadi are able to read write and speak A B C , recite Jan –Dec, numeric 1-50 very well. Moreover they are also teaching other fellow students.
- Education Material support given to 52 Students of Juna Bandar, Luni Bandar, Zarpara, Navinal and Bhadreshwar.
- Organize Balwadi Pravetsotsav for new admission of children in presence of their parents and leader of their community to reduce there fear about the class.
- Mother's meet on the topic of "Regularity in class" and also aware them for their children admissions in 1st Standard at 3 Vasahats.
- 48 Student Exposure Visit to Hajipir, Vithon-Nakhatrana Students from Navinal, Zarpara, Juna badar, Luni bandar & Bhadreshwar Village & Machhimar Vasahat.
- Arrangement of Vehicles for School Going Children from Bandar to respective villages. Presently We have made arrangements for Luni Bandar – 31 Students and Bavadi Bandar – 30 & Sekhadiya-7 Total-68 Students are being benefited.
- Independence day Celebration at Chachhvadi ,Juna Badnar and Luni Bandar

Fisherman Amenities : Coordination and Meetings

- Meeting was organized with CEE For Samwad program and 40 fishermen from Luni, Shekhadia, Zarpara, Navinal, Bhadreshwar were involved for betterment and other benefits
- Meeting was organized between Adani Marine Dept and fishermen community from Navinal for solving an issue of vessel approach of West Port.
- Meeting at Navinal for discussion the Progress work of Sanitation & Meeting at Modhava for discussing about Cricket Ground
- Meeting with the fisheries department , Bhuj for Government Scheme of Machhimar Community.

Income Generation Activities

- We have supported 21 Pagadiya Fisherman as a painting Labour.
- Mangroves plantation and maintenance, Total 1472 man days employment provided

Fee Support – SMJ High School Luni

With the objective of - Fees can't be constraint to the study for Girl Child and Reduction in Drop out of Fishermen students as they cannot continue their studies We have supported 34 students for further studies at SMJ High School, Luni

Exposure Visit

Organized visit Port , Power & Willmar with 105 Fishermen From Luni to aware them for Surrounding Industrial Environment and Inspired them for his Children Education

Net Support

Fishing Net Distribution to the 6 Pagadiya Fishermen who lost their fishing net, Rope in Cyclone by the Corporate Affairs.

Inauguration

- Community Centre at Navinal.
- Computer Training Centre at Juna Bandar
- Community Toilets at Navinal
- Shelters and Electricity at Luni Bandar

Fisherfolk Amenities: Meetings and Coordination

Fisherfolk Amenities: Overview

Fisherman Amenities

- **"Pagadiya maachmaar no medavo"** was organized for the foot fishermen on 30th June at Adani House where fishermen from Luni, Shekhadia ,Bhadreshwar, Mundra, Navinal and Zarpara village were invited.
- The main objective of this meet was to spread awareness and message of "De-Addiction" ,"Savings". Govt. Fisheries Officers given information about Govt Scheme related activities for Fishermen by Power Point Presentation.
- The Chief guests present were K.B Thakkar(Assistant director of Rajkot), Vishnu Brahmane (Officer-Fisheries) and Mavji bhai Bariya Director -VRTI ,Mandvi and Mukesh Saxena Sir ,Head -Adani Foundation
- It is great pleasure to share that many students from Fisherman community secured very good percentage in board examination. The parents of the students of class 10th and 12th were felicitated as their children scored high percentage.
- Moreover all the present Pagadiya fishermen were greeted with First-aid Box kit and Rechargeable torch which can be used daily in their fishing activity.

Fisherman Amenities

- Adani Foundation has arranged **"Cricket tournament "Adani Premiere League"** for Ten Days for Fishermen Community in which, Total 36 Teams of Fishermen participated mainly from Village Zarpara, Navinal, Shekhadia, Luni, Bhadreshwar Vandi(Tuna), Tragdi & Modhava.
- Cricket Tournament was started on 05-06-2015 at Shantivan Colony Cricket Ground.
- Nasib Eleven – Modhava and Samrat Eleven- Navinal has given great competition and entered into Finals.
- Final was held on 14-06-15 Sunday at 10.00 am. Between Nasib Eleven – Modhava & Samrat Eleven- Navinal toss won by the Samrat Eleven- Navinal decided to field First, Nasib Eleven – Modhava made 125 Runs in 15 Overs and Samrat Eleven- Navinal reached to the target and in 13 Overs they all out by Nasib Eleven- Modhava and won the tournament by 8 Wickets.
- Adani Foundation has awarded Trophy and Prize to the Winner Team and runners up Team. Adani Foundation has Given Trophy and Prize to the "Man of the Match" and "Man of the series".

Government Pension Scheme - Widows, senior Citizens and Handicapped

- **We are playing the role of facilitator in case of tie up with Government Scheme of Widows, Senior Citizens and Handicapped people**
- **The identity cards issued to two persons for the handicapped in coordination with Bhuj Samaj Suraksha Khata by regular visit and follow up.**
- **Six month 38 widows and 27 Senior Citizens, total 147 members benefitted the approval of pension certificate. One senior citizen widow will get Rs. 400 monthly and other will get Rs.950 per month.**

Category	Total forms	Comp.	Under Process
Widows	38	38	0
Snr Citizens	27	8	19
Handicapped	82	47	35
Total	**147**	**93**	**54**

Beti Vadhavo programme was organized 24 Villages in presence of Village Sarpanch and other leaders. We explain about the Various topics i.e. Importance about girl child , Sex Ratio, Gender Equality and Law regarding Child abortion.
This initiative is well accepted by community and we have observed visible change in mindset of them. We greet daughters with Kit (Small Bed sheet, Mosquito net, Soap and Cream with nutrition food for mother)

Sr.no	No of Village	No of Daughters
1	24	169

Various Trainings

Women Empowerment Training

- **Objective**: Women Group Leadership and group strengthen
- **Point Discussed**: Leadership of Group, Difficulties arrived in group, How to Improvement leader and Strengthen Social Position
- **Venue: Ahinsadham, Pragpar**
- **Partner** : VRTI, Mandvi
- **Participant Details** : 35 women from Siracha, Navinal and Kandagra and 32 women from Shekhadia and Sadau village.

Sr. no	Type of Trainings	No of Women	No of Women
1	Group Strengthens	2	38
2	Savings Trainings	2	32
3	Leadership Trainings	1	28
4	Business Dev. Trainings	1	30
		6	128

Monsoon Relief Work

It is very sad to share that due to heavy rain, may cows and goats died in Beraja, Kukadsar and other villages.

At village Fachariya, Maldhari Community is residing. They lost 82 cows in heavy rain. We had provided Feed bags to them to save other cows.

Farmer's Training

We have initiated Programme for Awareness of Farmers in collaboration of KVK. Outreach is approximate 30 farmers at 3 villages

Objective: Farmer group formation and issue Related agriculture

Topic Discussed:

- **Group Formation: Rules and regulations**
- **Requirement discussion**
- **KVK and Adani Foundation collaboration and discussion of the work done together.**
- **Discussion and coming up with solution of the problems faced by the farmers.**

Livelihood Projects : Overview

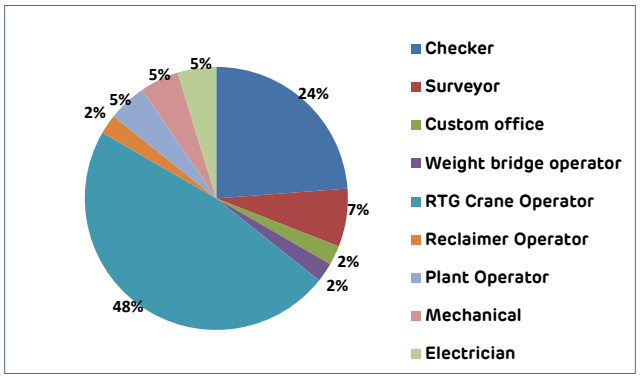
Adani Skill Development Center: Mundra

The objective of Adani Skill Development Centre is to impart different kinds of trainings to the students of 10th, 12th or ITI from surrounding areas. Thus various employment oriented programmes are organized to optimize the skills, art and knowledge through proper guidance and direction.

Course wise Status: Mundra

Sr.No.	Course Name	Location	M	F	Total
1	IT -Basic Computer	ASDC	44	25	69
2	Tally ERP 9	ASDC	11	0	11
3	Beauty parlor	Gundala	0	12	12
4	Basic Embroidery Work	Desalpur	0	25	25
5	Tailoring	Desalpur	0	15	15
6	IT - Basic Computer (Fisher men)	Navinal	12	10	22
7	Beautyparlour	Mundra	0	27	27
8	Checker	APSEZ	8	0	8
9	Checker Cum RTG Crane Operator	APSEZ	23	0	23
10	IT - Basic Computer	Siracha	57	46	103
11	Tailoring	Shekhdiya	0	14	14
12	Febric Work	Mundra	0	5	5
13	Glass Printing	Mundra	0	5	5
14	Mahendi	Mundra	0	10	10
15	IT - Basic Computer	Navinal	10	22	32
16	Mobile Repairing	ASDC	14	0	14
17	Mechanical & Electrical training	CT, APSEZ	11	0	11
18	IT - Basic Computer	Motabhadiya	13	6	19
19	Tailoring	Vadala	0	60	60
	Total		203	282	485

Job Placement after Technical Training



42 people employed after technical training with average salary Rs. 9000/- Monthly.

Adani Skill Development Center : Non Technical Training

Adani Skill Development Center : Technical Training

Rural Infrastructure Development : Building Block of the Society

Work Completed during six months

Extension of Adani DAV School

1. Water conservation and ground water recharge
   - Pond deepening work, Mota Kandagara
2. Drinking water related activity
   - Repairing of RO plant in school at Dhrub
   - New RO plant in school at Tunda Wandh
3. Education Related Projects
   - **Extension of Adani DAV School**
4. Health Related activity
   - Medical center at Tragadi village
   - Toilet for widow woman at Luni village = 1 Nos
   - Toilet for widow woman at Baroi village = 1 Nos
   - Toilet blocks at Dhrub village = 8 Nos
5. Other projects – corporate related activity
   - Atithi bhavan at Tunda Wandh
   - Over head tank at Modhava
   - Crematorium wall at Tragadi
   - Construction of rooms in Madrasa at Luni
   - Sai sutar comm hall at mundra
   - Approach road for Pagadiya, Shekhadia

RID Projects

Financial Budget

Adani Foundation, CSR Budget - Mundra Budget Utilization 2015-16 (April to September 2015)			
Sr. No.	Program	Budget 2015-16 In Lacs	Expenditure April to Sept.2015 In Lacs
A.	**Admin Expense**	**161.21**	**52.49**
B.	**Education**		
(i)	Education Initiative	48.30	37.96
(ii)	Adani Vidya Mandir-Bhadreshwar	124.06	44.56
(iii)	Shanti Vihar	351.16	147.89
	Sub Total	**523.52**	**230.41**
C.	**Community Health**	**332.52**	**161.27**
D.	**Fisher Folk, Sustainable Livelihood Development & Agriculture**	**160.00**	**98.04**
E.	**Rural Infrastructure Development**	**338.49**	**75.25**
	Other Expenditure		**88.90**
	BUDGET 2015-16: GRAND TOTAL	**1515.74**	**706.36**

"Gadhpan me Ji Dikro kam aye te khare tane adani foundation kam aayoo"..... Mariyam Ben, Bhuj

કેસ સ્ટડી

ભુજ શહેરના જુના રેલવે સ્ટેશન વિસ્તારમાં રહેતા મરીયમબેન જુસબની વાત છે. મરીયમબેનને બે પુત્રો અને બે પુત્રીઓ છે અને પોતે વિધવા છે. હાલમા બન્ને પુત્રો અલગ રહે છે અને દિકરીઓના લગ્ન થઈ ગયા છે.

મરીયમબેન પોતે એકલા રહે છે અને સવારે વહેલા ઉઠીને પોતાની દિનચર્યા ચાલુ કરે છે. આજે પણ તે રૂટીન મુજબ વહેલા ઉઠીને પોતાનું કામ કરવા લાગ્યા તેમને ખબર નહોતી કે આજનો દિવસ કાયમી કરતા તેમના માટે જુદો હશે પોતાના કામમાં વ્યસ્ત હતા અને અચાનક તેમનો પગ લપસી ગયો અને તે પડી ગયા પડતાની સાથે જ તેમના ડાબા પગનું હાટકું ભાગી ગયું. તેમની બાજુવાળાને આ બાબતની જાણ થતા તેમને અદાણી જી.કે. જનરલ હોસ્પિટલમાં લઈ આવ્યા ત્યાં તેમના પગનું ઓપરેશન થયું પરંતુ સાથે સાથે કરમની નબળાઈ ગણવી કે શું તેમને હાઈ ડાયાબીટીસ પણ છે. આ બધી જ પીડા તો મરીયમબેન મુંગા મોએ સહન કરે છે. પરંતુ વધારે તો તેમને એ વાતનું દુ:ખ છે કે જેમને નવ નવ મહિના પોતાના કોઠામાં રાખીને ખુબજ વ્હાલથી પાલન પોષણ કરી ને મોટા કર્યા છે તેવા કહેવાના દિકરાઓ આજ સુધી પુછવા પણ નથી આવતા કે બા તમને કેમ છે ? કહેવાય છે ને કે 'માં તે માં બીજા વગડાના વા' માં કે જે બીજા કોઈ પણ નું સ્થાન લઈ શકે છે પરંતુ બીજુ કોઈ માનુ સ્થાન લઈ શકતુ નથી આવી માને છેલ્લા ૨૮ દિવસથી હોસ્પિટલમાં દાખલ હોવા છતા પણ દિકરાઓ પુછવા પણ નથી આવ્યા આ માની સારવાર તો ખુબ જ બરાબર થતી હતી પરંતુ જેટલો પગનો દુ:ખાવો નહોતો એટલો દુ:ખાવો એ વાતનો હતો કે પોતાના દિકરાઓ આવીને કહેશે કે બા તમને કેમ છે ? પરંતુ તે બન્યું નહી પણ એ વાતની ખોટ અદાણી ફાઉન્ડેશનના સ્ટાફે પુરી કરી મરીયમબેન પાસે જઈને કીધુ બા તમને કેમ છે ? બા તમારે કાઈ જરૂર છે ? આવા શબ્દો સાંભળતા વર્ષોથી તડપતી માતાની આંખો સોધાર આસંથી ઉભરાય ગઈ અને બોલ્યા બસ બેટા આજ બધીજ પીડા મારી દુર થઈ ગઈ છે. એમ કહીને આખી કહાની સંભળાવી આવા વડીલોને નથી કોઈ આર્થિક પ્રકારની જરૂરીયાત પરંતુ તે માટે તો માત્ર બે મીઠા શબ્દોની જરૂર છે. જે અદાણી ફાઉન્ડેશને આપ્યા છે.....

Media Corner

સામાજિક દાયિત્વ

મુન્દ્રાની વાંઢમાં 25 મકાન-સમાજવાડીનું લોકાર્પણ

શિક્ષણના ક્ષેત્રે હવે પગ પગલી નહીં ચાલે, હરણફાળ જ ભરવી પડશે : રાજ્યમંત્રી

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Media Corner

રબારી જ્ઞાતિના વસવાટવાળા રબારી વાંઢનું લોકાર્પણ થયું

રેવેન્યુ રેકર્ડમાં સમાવાશે તો વધુ ફાયદો થશે

શિક્ષણમાં પગલી નહીં, હરણફાળ ભરો

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અદાણી ફાઉન્ડેશન દ્વારા માછીમારો માટે કમ્પ્યુટર ટ્રેનીંગ સેન્ટર તથા મેડીકલ રુમનું લોકાર્પણ

અદાણી ફાઉ. દ્વારા મુન્દ્રાના કાંઠાળ વિસ્તારના માછીમારો માટે કમ્પ્યુટર ટ્રેનીંગ સેન્ટર તથા મેડીકલ રૂમનું લોકાર્પણ

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સામાજિક દાયિત્વ

રબારી વાંઢ વસાહતને લીલોતરો ઓપ આપવા પ્રતીકાત્મક વૃક્ષારોપણ અગ્રણીઓના હસ્તે કરવામાં આવ્યું હતું

મુન્દ્રાની વાંઢમાં 25 મકાન-સમાજવાડીનું લોકાર્પણ

મુન્દ્રાની વાંઢમાં સમાજવાડી અને મકાનોનું લોકાર્પણ કરાયું હતું.

વ્યક્ત કર્યો હતો.

વધુમાં રબારી વાંઢ વસાહતને લીલોતરો ઓપ આપવા પ્રતિકાત્મક વૃક્ષારોપણ કરતાં આગામી ચોમાસામાં અદાણી, વન વિભાગના સભ્યોને વધુને વધુ વૃક્ષો વાવી તથા માવજતે ઉછેરવા આહવાન કરતાં સિમેન્ટનાં જંગલોને હરિયાળીથી આચ્છાદિત કરવા તમામને તમામ સમાજ સેવકો, સેવાભાવી સંસ્થાઓને આગળ આવવા અપીલ કરી હતી.

આ પ્રસંગે રબારી અગ્રેસર અરજણભાઈ રબારીએ અદાણી ફાઉન્ડેશનના મધુભાઈ માંકડનું વિશેષ સન્માન કર્યું હતું, જ્યારે આ પ્રસંગે મધુભાઈ માંકડે ભૂકંપ વખતે રબારી સમાજ માટે તેમના દ્વારા થયેલ પુનઃવસનની આછેરી ઝલક આપતાં એ પ્રશ્ને ૨૦૦૮માં ગૌતમભાઈ અદાણીએ સેનિકપણું છાપવી નીકાને કાંઠા પર લાવીને જેથી તેને માટે આભારની લાગણી વ્યક્ત કરી હતી.

આ તકે સ્વાગત પ્રવચન અદાણી ફાઉન્ડેશનના વડા મુકેશ સાકરેનાએ કર્યું હતું, આ કાર્યક્રમમાં પંકિતભેન, વાલજીભાઈ ટાપરીયા, પબેન્દ્રસિંહ જેઠર, ગીરીશભાઈ છેડા, માંડણભાઈ રબારી, અદાણી ફાઉન્ડેશનના ભાવેશભાઈ ગૌડ, મામલતદાર વિજય દેસાઈ હાજર રહ્યા હતા.

અત્રે ઉલ્લેખનીય છે કે, કચ્છ જિલ્લામાં અદાણી ફાઉન્ડેશન દ્વારા વિવિધ સેવાકીય ઉપરાંત શૈક્ષણિક અને સામાજિક પ્રકલ્પો ચલાવવામાં આવી રહ્યા છે.

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Media Corner

નાના કપાયાની શાળામાં વિદ્યાર્થીઓએ તૈયાર કરેલી કૃતિઓ પ્રદર્શનમાં મૂકાઈ

છાત્રોએ વ્યવહારિક જીવનમાં ઉપયોગી કૃતિઓ તૈયાર કરી

મુંદરાની અદાણી ડી.એ.વી. પબ્લિક સ્કૂલને બ્રિટિશ કાઉ.નો એવોર્ડ

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માછીમાર પરિવારના બાળકોને ઉચ્ચ શિક્ષણ માટે તત્પર રહેવા ખાતરી

કંઠીપટના માછીમારોને કમ્પ્યૂટર શિક્ષણમાં શ્રેષ્ઠ બનાવવાની નેમ

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ભદ્રેશ્વરમાં છાત્રો વ્યક્તિત્વ વિકાસ અને જીવન મૂલ્યોના પાઠ ભણ્યા

અદાણી ફાઉન્ડેશન દ્વારા પરવરીશ કેમ્પ યોજાયો

મુન્દ્રા તાલુકાના બાળકો જીવન મૂલ્યોના પાઠ ભણાતા શીખ્યા

અદાણી દ્વારા પરવરિશ કેમ્પનું આયોજન

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મુન્દ્રામાં માછીમારોને વ્યસન મુક્તિ અને બચત અંગે માર્ગદર્શન અપાયું

૯ ગામમાંથી ૧૬૫ માછીમાર અગરીઓ સ્વહેમિલનમાં ઉમટ્યા

મુંદરામાં યોજાયો પગડીયા માછીમાર ભાઈઓનો મેળાવડો

મત્સ્ય ઉદ્યોગની વિવિધ યોજનાઓ વ્યસનમુક્તિ તથા બચત અંગે માર્ગદર્શન અપાયું

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Our Article in Chitralekha

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મુન્દ્રામાં માછીમારોને વ્યસન મુક્તિ અને બચત અંગે માર્ગદર્શન અપાયું

માર્કેટિંગ માટે વધુ સક્રિય પ્રયાસો કરવા આવશ્યક

કચ્છની હસ્તકલામાં બોલીવૂડની બજાર સર કરવાની તાકાત છે

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મુંદરામાં માછીમારો માટે અદાણી પ્રીમિયર લીગનું આયોજન કરાયું

મુંદરા માછીમાર સમુદાયના ભાઈઓ માટે ક્રિકેટ ટુર્નામેન્ટ અદાણી પ્રિમિયર લીગ-૨૦૧૫નું યોજાઈ

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વિરાયતન અને અદાણી વચ્ચે કેમ્પસ ઈન્ટરવ્યૂના થયા કરાર

ઇજનેરીના છેલ્લા વર્ષના છાત્રોને અપાશે રોજગાર

વિદ્યાર્થીઓને રોજગારી આપવા અદાણી-વીરાયતનનું જોડાણ

ઇજનેરી છાત્રો માટે ઉદ્યોગ એકમ સાથે એમ.ઓ.યુ. થયા

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મુંદરા ઘટકના ૯૫૧ કુપોષિત બાળકની સંભાળ લેખે લાગી : વર્ષમાં સંખ્યા ઘટીને ૨૫

વાયોરમાં સંસ્થા આયોજિત મેડિકલ કેમ્પમાં ૨૧૭ દર્દીઓની સારવાર

અદાણી ફાઉન્ડેશન દ્વારા નિઃશુલ્ક મેડિકલ કેમ્પ યોજાયો

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અદાણી ફાઉન્ડેશન દ્વારા નિઃશુલ્ક નિદાન કેમ્પ યોજાયો

મુંદરા તા.માં 'પ્રયાસ'ના બેનર હેઠળ સફાઇ અભિયાનમાં આહુતિ અપાઇ

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રાષ્ટ્રની પ્રગતિ માટે વસ્તી નિયંત્રણ જરૂરી

અદાણી હોસ્પિટલ મુન્દ્રામાં સ્ત્રી આરોગ્ય જાગૃતિ અને વિશ્વ વસ્તી દિનની ઉજવણી

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Media Corner

ભૂખી નદીમાં ગાબડાં પડતાં વાહનો અટકયાં

મુંદરા તરબતર; વધુ ચાર ઈંચ

Media Corner

અદાણી ફાઉન્ડેશન દ્વારા અબડાસા તાલુકાના જખૌમાં નિઃશુલ્ક જનરલ હેલ્થ કેમ્પ અને બ્લડ ડોનેશન કેમ્પનું આયોજન

અદાણી ફાઉન્ડેશન દ્વારા મુંદ્રા તાલુકામાં બેટી વધાવો બેટી બચાવો કાર્યક્રમમાં ૨૯ ગામોમાં ૨૯૧ બાળાઓને વધાવાઈ

Media Corner

અદાણી ફાઉન્ડેશન દ્વારા માછીમાર સમુદાયના બાળકોને ઉચ્ચ અભ્યાસ માટે શિષ્યવૃતિ વિતરણ કાર્યક્રમ

અદાણી દ્વારા માછીમારોનાં બાળકોને અભ્યાસ માટે શિષ્યવૃત્તિ અપાઈ

Media Corner

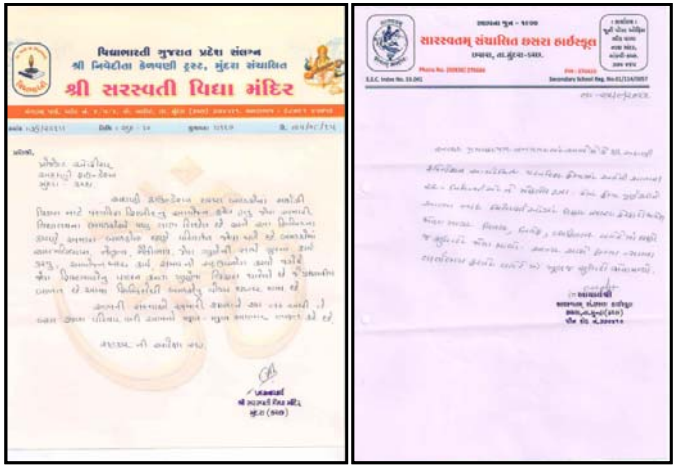
અદાણી ફાઉન્ડેશન દ્વારા મુંદરા તાલુકામાં "બેટી વધાવો બેટી બચાવો" કાર્યક્રમ અંતર્ગત ૨૯ ગામોમાં ૨૯૧ બાળાઓને વધાવવામાં આવી.

અદાણી વિદ્યામંદિર, ભદ્રેશ્વરમાં આનંદ મેળાનું આયોજન

બાળકોની સર્જનાત્મક શક્તિ ખીલવવા ભદ્રેશ્વરની શાળામાં આનંદ મેળો યોજાયો

અદાણી વિદ્યામંદિર ભદ્રેશ્વરમાં આનંદ મેળાનું સફળ આયોજન

Thanks Letter



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Resources Logistics Energy

Annexure – 4

Mangrove Afforestation

S. NO.	Location	FY	Area (Hectare)	Clearance Reference	Plantation/Gap Filling	Species
A.1	Mundra Port Area (Mundra, Kutch)		24.00	Environment Clearace - Mundra (J-16011/13/95-IA.III dated 25 August 1995)	Plantation	Avicennia marina
Total Plantation			**24.00**			
B.1	Mundra Port Area (Mundra, Kutch)		25.00	Environment Clearace - Mundra (J-16011/30/2003-IA.III dated 21 July 2004)	Plantation	Avicennia marina
Total Plantation			**25.00**			
C.1	Luni/Hamiramora (Mundra, Kutch)	2007-08	40.00	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	Avicennia marina Rhizophora mucronata Ceriops tagal
C.2		2009-10	10.00		Gap Filling Work	
C.3		2010-11	10.00		Gap Filling Work	
C.4		2011-12	95.40		Plantation	
C.5		2012-13	25.40		Plantation	
C.6		2013-14-15	70.00		Gap Filling Work	
Total Plantation (C.1+C.4+C.5)			**160.80**			
D.1	Kukadsar (Mundra, Kutch)	2012-13	66.50	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	Avicennia marina
D.2		2013-14	10.00		Gap Filling Work	Avicennia marina
Total Plantation (D.1)			**66.50**			
E.1	Forest Area (Mundra)	2011-12	50.00	Forest Clearance - Mundra (F.No. 8-2/1999-FC (pt) dated 27 February 2009)	Plantation	Avicennia marina
E.2		2012-13	248.00		Plantation	Avicennia marina
Total Plantation (E.1+E.2)			**298.00**			

S. NO.	Location	FY	Area (Hectare)	Clearance Reference	Plantation/Gap Filling	Species
F.1	Jangi village (Bhachau, Kutch)	2012-13	50.00	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	Avicennia marina
F.2		2013-14	20.00		Gap Filling Work	Avicennia marina
Total Plantation (F.1)			**50.00**			
G.1	Jakhau Village (Abdasa, Kutch)	2007-08	40.10	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	Avicennia marina Rhizophora mucronata Ceriops tagal
G.2		2008-09	10.00		Gap Filling Work	
G.3		2009-10	10.00		Gap Filling Work	
G.4		2011-12	50.00	Environment Clearance - Dahej (11-37/2007-IA-III dtd 11 November, 2008)	Plantation	
G.5		2013-14	20.00		Gap Filling Work	
G.6		2012-13	30.00		Gap Filling Work	
G.7		2012-13	20.50	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	
G.8		2012-13	200.00	Environment Clearance - Mundra (10-47/2008-IA.III dtd. 12th Jan,2009)	Plantation	
G.9		2013-14-15	50.00		Gap Filling Work	
Total Plantation (G.1 + G.4 + G.7 + G.8)			**310.60**			
H.1	Sat Saida Bet (Kutch)	2014-15	250.00	Commitment with KPT for 250 Ha. - Tuna (By undertaking dated 3 June, 2013)	Plantation	Avicennia marina
Total Plantation			**250.00**			

S. NO.	Location	FY	Area (Hectare)	Clearance Reference	Plantation/Gap Filling	Species
I.1	Village Dandi (Navsari)	2006-07	200.00	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	Avicennia marina Rhizophora mucronata Ceriops tagal
I.2		2007-08	100.00		Plantation	
I.3		2007-08	100.00	Environment Clearance - Dahej (11-37/2007-IA-III dtd 11 November, 2008)	Plantation	
I.4		2008-09	200.00	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	
I.5		2010-11	200.00		Plantation	
Total Plantation (I.1 + I.2 + I.3 + I.4 + I.5)			**800.00**			
J.1	Village Talaza (Bhavnagar)	2011-12	50.00	Environment Clearance - Dahej (11-37/2007-IA-III dtd 11 November, 2008)	Plantation	Avicennia marina
J.2	Village Narmada (Bhavnagar)	2014-2015	250.00	CRZ Recommendation - Mundra (Env-10-2005-222-P dated 12 October, 2006)	Plantation	Avicennia marina
Total Plantation (J.1 + J.2)			**300.00**			
K.1	Village Malpur (Bharuch)	2012-13-14	200.00	CRZ Recommendation - Dahej ENV-10-2006-71-P dtd 29th May, 2007	Plantation	Avicennia marina
K.2	Village Kantiyajal (Bharuch)	2014-15	50.00	CRZ Recommendation - Hazira ENV-10-2012-30-E dtd 11th May,2012	Plantation	Avicennia marina
K.3	Village Devla Bharuch	2014-15	50.00		Plantation	Avicennia marina
K.4	Village Devla Bharuch	2015-16	100.00		In Progress	Avicennia marina
Total Plantation (K.1 + K.2 + K.3 + K.4)			**400.00**			
L.1	Village Tada Talav (Khambat, Anand)	2015-16	100.00	Environment and CRZ clearance - Mundra SEZ (10-138/2008/IA.III dated 15 July 2014)	In Progress	Avicennia marina
L.2	Village Tada Talav (Khambat, Anand)	2015-16	100.00		In Progress	Avicennia marina
Total Plantation (L.1 + L.2)			**200.00**			
G. Total (Plantaion done + In Progress)			**2884.90**			