adani

APSEZL/EnvCell/2015-16/040 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)
30/11/15
'केन्द्रीय पर्यावरण भवन',
'Kendriya Paryavaran Bhawan'
लिंक रोड नं.-3, ई-5, रविशंकर नगर,
Link Road No.-3, E-5, Ravishankar Nagar,
भोपाल / BHOPAL

Sub : Half yearly Compliance report of Environment Clearance under CRZ notification for "Port expansion project including dry/break bulk cargo container terminal, railway link and related ancillary and back-up facilities at Mundra Port, Dist. Kutch in Gujarat by M/s. Adani Ports & SEZ Limited."

Ref : Environment clearance under CRZ notification granted to /s. Adani Ports & SEZ Limited vide letter dated 20th September, 2000 bearing no. J-16011/40/99-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

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Environmental Clearance Compliance Report

of

Port expansion project including dry/break bulk cargo container terminal, railway link and related ancillary and back-up facilities

at

Mundra Port,

Dist. Kutch, Gujarat

of

Adani Ports and SEZ Limited

for

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 under CRZ notification		

Half yearly Compliance report of Environment Clearance under CRZ notification for "Port expansion project including dry/break bulk cargo container terminal, railway link and related ancillary and back-up facilities at Mundra Port, Dist. Kutch in Gujarat		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
A. Specific Condition		
i	All the conditions stipulated by the Gujarat Pollution Control Board vide their NOC No. PC/NOC/Kutch/391/18424 dated 10.6.99 and No. PC/NOC/Kutch/222(2)16880 dated 1.5.99 shall be strictly implemented.	The project is in operation phase and has been granted Consent to operate (CC&A) vide letter no. AWH 60840 valid till 17th November, 2016 by GPCB.
ii	The conditions stipulated in the letter No ENV-1098-6477-PI dated October 28, 1999 and No. ENV-1099-2702-PI dated 27.12.99 of shall be strictly implemented.	Point wise compliance report of CRZ recommendations issued vide letter No ENV-1098-6477-PI dated October 28, 1999 and No. ENV-1099-2702-PI dated 27.12.99 is enclosed as **Annexure- A**.
iii	The turning circle should be increased from 550 m to 600 m.	Complied. Details submitted on 15.12.2008.
iv	A girdle canal with settlement tanks shall be provided around the coal storage area.	Trap drains are provided around the coal storage yard.
v	All efforts shall be made for water conservation and rain water harvesting. Arrangements shall be made for roof top rain water harvesting from various structures.	Details of the same is submitted to the Ministry of Environment and forest along with half yearly compliance dated 02.12.2013.
vi	To obviate the problem of coastal erosion due to dredging, the setback distance of at least 50 m from the Chart Datum line of Bocha island would be maintained.	During Maintenance dredging in this area it is ensured that at least 50 m distance is maintained.
vii	The dredged material shall be disposed of only in the identified locations outside the CRZ area. While dumping the dredged material, sufficient distance should be ensured from the existing mangroves so that there is no damage to the ecology. During dumping of dredged material the mitigative measures as suggested by NIO shall be implemented. It shall be ensured that there is no dumping of dredged material in the CRZ.	The dredged material was utilized in the level rising in line with the EIA study done by NIO.

Half yearly Compliance report of Environment Clearance under CRZ notification for "Port expansion project including dry/break bulk cargo container terminal, railway link and related ancillary and back-up facilities at Mundra Port, Dist. Kutch in Gujarat		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
viii	The mangrove afforestation shall be undertaken at the identified sites and the progress report in this regard shall be submitted to this Ministry regularly. All the recommendations suggested in the NIO report for restoration of the coastal habitat by mangrove afforestation at Navinal island shall be strictly implemented.	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. Details on mangroves afforestation carried out by APSEZL till date is annexed as **Annexure – 1.**
ix	No ground water shall be withdrawn for this project.	Entire water requirement is sourced from Narmada water and desalination plant of APSEZL.
x	The project proponent shall ensure that the construction workers do not cut the Mangroves for fuel wood etc.	Construction activity is already completed.
xi	The project proponent shall ensure that no creeks are blocked and the natural drainage of the area is not affected due to project activities.	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.
xii	The project proponent shall ensure that there will be no disposal of sullage and sewage generated from construction camps, surface run-off from construction sites, and oil and grease spillage from the construction equipments in the creeks.	Construction activity is already completed.
xiii	The project proponent shall stick to the time bound programme submitted to the Department of Environment, Government of Gujarat for the proposed activities including installation of desalination plant for meeting the entire water requirement. They shall coordinate their construction/operations schedule with the installation schedule of desalination plant.	Entire water requirement is sourced from Narmada water and desalination plant of APSEZL.

Half yearly Compliance report of Environment Clearance under CRZ notification for "Port expansion project including dry/break bulk cargo container terminal, railway link and related ancillary and back-up facilities at Mundra Port, Dist. Kutch in Gujarat		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
xiv	The project proponent shall ensure that the commercial fisheries are not hampered due to presence of barges, vessels and other activities in the region. Necessary plan in this regard shall be prepared in consultation with the NIO and submitted within 3 months.	Complied.
xv	The project proponent shall bear the cost of the external agency that may be appointed by the Department of Environment, Government of Gujarat for carrying out the supervision and/or the monitoring of the construction activities.	Point noted.
xvi	The project proponent shall carry out the post-project monitoring of various environmental parameters in consultation with the Department of Environment, Government of Gujarat and Gujarat Pollution Control Board.	• Third party monitoring is being carried out by NABL and MoEF accredited agency. • Summary of monitoring reports for duration from April'15 to Sept'15 are enclosed as **Annexure-2**.
xvii	The project proponent shall prepare the detailed traffic control management plan for the port and shall participate in the VTMS to be developed for the Gulf of Kachchh.	• Well defined traffic management procedures are in place. • M/s APSEZL has participated in VTMS program. Details submitted on 02.12.2013.
xviii	Action plan shall be prepared by the project proponents to prevent damage to marine life and also to the coastline in case of any oil spillage and the same shall be strictly implemented. Regular mock drills shall be carried out to ensure fitness of the equipment in place.	Oil spill contingency plan is in place and implemented. Mock drills are conducted regularly. Typical drill conducted is attached as **Annexure - 3**.

Half yearly Compliance report of Environment Clearance under CRZ notification for "Port expansion project including dry/break bulk cargo container terminal, railway link and related ancillary and back-up facilities at Mundra Port, Dist. Kutch in Gujarat		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
xix	The project proponents shall work out the maximum quantity of spilled material, which can find its way into the coastal waters, under different accident scenarios, and their impact on aquatic life shall be studied after clearly demarcating the impact zones. On the basis of such studies, the necessary action plan to mitigate the likely impacts shall be prepared before commencement of the operations. Action taken report in this regard shall be submitted to the Ministry.	Oil spill contingency plan is in place and implemented. The same has been submitted to the Ministry along with Half yearly compliance report dated 29.05.2014.
B. General Condition		
i	Construction of the proposed structures should be undertaken meticulously conforming 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 Departments / Agencies.	Construction activities are completed in accordance with the prevailing laws.
ii	The proponent shall ensure that as a result of the proposed constructions ingress of the saline water into the ground water does not take place. Piezometers shall be installed for regular monitoring for this purpose at appropriate locations on the project site.	Complied, Detail submitted on 02.12.2013. Regular monitoring are being carried out.
iii	A comprehensive contingency plan in collaboration with the concerned authorities must be formulated to contain in case of any oil spills. Appropriate devices such as oil skimmer, oil monitor, oil water separator must be acquired for strengthening the contingency plan. All the service vessels that required for oil spill operations must be equipped with booms and dispersants. The personal onboard of these vessels must be properly trained in operation of these booms and dispersants.	Oil spill contingency plan is in place and implemented. The same has been submitted to the Ministry along with Half yearly compliance report dated 29.05.2014.

Half yearly Compliance report of Environment Clearance under CRZ notification for "Port expansion project including dry/break bulk cargo container terminal, railway link and related ancillary and back-up facilities at Mundra Port, Dist. Kutch in Gujarat		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
iv	The operation plan for responding to an oil spill must include clear procedures for notification of a spill, response decision, clean up operations, communications, and termination of cleanup operations, cleanup cost, oil pollution, damage control and disaster management plan.	Oil spill contingency plan with defined procedure and responsibilities is in place and implemented. The same has been submitted to the Ministry along with Half yearly compliance report dated 29.05.2014.
v	A well-equipped laboratory with suitable instruments to monitor the quality of air and water shall be set up so as to ensure that the quality of ambient air and water conforms to the prescribed standards. The laboratory will also be equipped with qualified manpower including a marine biologist so that the marine water quality is regularly monitored in order to ensure that the marine life is not adversely affected as a result of implementation of the said project. The quality of ambient air and water shall be monitored periodically in all the seasons and the results should be properly maintained for inspection of the concerned pollution Control agencies. The periodic monitoring reports at least once in 6 months must be sent to this Ministry as well as its Regional Office at Bhopal.	• Third party monitoring is being carried out by NABL and MoEF accredited agency. • Summary of monitoring reports for duration from April,15 to Sept,15 are enclosed as **Annexure – 2**. • Half yearly compliance reports containing monitoring report is regularly submitted to MoEF, Bhopal.
vi	Adequate provision for infrastructure facilities such as water supply, fuel for cooking, sanitation etc. must be provided for the laborers during the construction period in order to avoid damage to the environment. Colonies for the laborers should not be located in the CRZ area. It should also be ensured that the construction workers do not cut trees including mangroves for fuel wood purpose.	Construction activities are completed.

Half yearly Compliance report of Environment Clearance under CRZ notification for "Port expansion project including dry/break bulk cargo container terminal, railway link and related ancillary and back-up facilities at Mundra Port, Dist. Kutch in Gujarat		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
vii	To prevent discharge of sewage and other liquid wastes in to the water bodies, adequate system for collection and treatment of the wastes must be provided. No sewage and other liquid wastes without treatment should be allowed to enter into the water bodies. The quality of treated effluents, emissions, solid wastes and noise levels must confirm to the standards laid down by the competent authority including the Central/State Pollution Control Board.	All the liquid effluent and sewage is being treated in the treatment plant. • Third party monitoring of treated water is being carried out by NABL and MoEF accredited agency. • Summary of monitoring reports for duration from April,15 to Sept,15 are enclosed as **Annexure – 2**.
viii	Appropriate facility should be created for the collection of solid and liquid wastes generated by the barges/vessels and their safe treatment and disposal should be ensured to avoid possible contamination of the water bodies.	• Ships berthing at Mundra Port comply with MARPOL regulations. • No discharge 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.
ix	Necessary navigational aids such as channel markers should be provided to prevent accidents. Internationally recognized safety standards shall be applied in case of barge /vessel movements.	Navigational aids such as buoys and leading lights have been provided.
x	During operation phase proper precautions should be taken to avoid any oil spills and no oily wastes shall be discharged into the water bodies.	• Oil spill contingency plan is in place and implemented. The same has been submitted to the Ministry along with half yearly compliance report dated 29.05.2014. • Oily sludge is being disposed through authorized recycler / re-processor
xi	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 by Adani Foundation. Details of the CSR activity and expenditure from April,15 to Sept,15 is enclosed as **Annexure -4**.

Half yearly Compliance report of Environment Clearance under CRZ notification for "Port expansion project including dry/break bulk cargo container terminal, railway link and related ancillary and back-up facilities at Mundra Port, Dist. Kutch in Gujarat		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
xii	The quarrying material required for the construction purpose shall be obtained only from the approved quarries / borrow areas. Adequate safeguard measures shall be taken to ensure that the overburden and rocks at the quarry site does not find their way into water bodies.	Construction activities are completed.
xiii	The dredging operations, if any, to be undertaken with the prior approval of this Ministry, shall be executed with appropriate safeguard measures to prevent turbidity conditions in consultation with the expert agencies such as CWPRS / NIO.	Capital dredging is completed and project is in operation phase.
xiv	For employing unskilled, semi-skilled and skilled workers for the project, preference shall be given to local people.	Preference is given to local people for employment based on their qualification and experience. Approx. 980 locals (Kutchhi) are employed out of 4169 persons employed by Adani group at Mundra.
xv	To meet any emergency situation, appropriate firefighting system and water pipelines 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 firefighting facility has been submitted along with the half yearly compliance report dated 02.12.2013.
xvi	Regular drills should be conducted to check the effectiveness of the on-site Disaster Management Plan.	Regular drills are being conducted for effectiveness of the system. Typical drill conducted is attached as **Annexure - 5**.
xvii	The recommendations made in the Environmental Plan and Disaster Management Plan, as contained in the EIA and Risk Analysis Reports of the project, shall be effectively implemented.	All the recommendations are being implemented.

Half yearly Compliance report of Environment Clearance under CRZ notification for "Port expansion project including dry/break bulk cargo container terminal, railway link and related ancillary and back-up facilities at Mundra Port, Dist. Kutch in Gujarat		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
xviii	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.
xix	The project affected people, if any, should be properly compensated and rehabilitated.	Not applicable.
xx	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.	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.
xxi	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 Boards 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.

Half yearly Compliance report of Environment Clearance under CRZ notification for "Port expansion project including dry/break bulk cargo container terminal, railway link and related ancillary and back-up facilities at Mundra Port, Dist. Kutch in Gujarat		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
xxii	In case of deviation or alteration in the project including the implementing agency, afresh reference should be made to this Ministry for modification in the clearance conditions or imposition of new ones for ensuring environmental protection. The project proponents should be responsible for implementing the suggested safeguard measures.	Point Noted.
xxiii	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.
xxiv	This Ministry or any other competent authority may stipulate any other additional conditions subsequently, if deemed necessary, for environmental protection, which shall be complied with.	Point Noted.
xxv	A copy of the clearance letter will be marked to concerned Panchayat / local NGO. If any, from whom any suggestion / representation has been received while processing the proposal.	Complied.
xxvi	State Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industries centre and Collector's Office/Tehsildar's Office for 30 days	This condition does not belong to project proponent.
xxvii	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 letters are available with the State Pollution Control Board and may also be seen at Website of the Ministry of Environment and Forests at http://www.envfor.nic.in/.	Complied.

Half yearly Compliance report of Environment Clearance under CRZ notification for "Port expansion project including dry/break bulk cargo container terminal, railway link and related ancillary and back-up facilities at Mundra Port, Dist. Kutch in Gujarat		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
xxvii	The Project Proponents should inform the Regional Office as well as the Ministry the date of financial closure and final approval of the project by the concerned authorities and the date of start of Land Development Work.	Complied.
xxix	The Project Proponent should make specific arrangements for rainwater harvesting in the project design and the rainwater so harvested should be optimally utilized.	Details of the same is submitted to the Ministry of Environment and forest along with half yearly compliance dated 01.06.2015.

Annexure – A

Half yearly Compliance report of CRZ recommendation for "Port expansion project including dry/break bulk cargo container terminal, railway link and related ancillary and back-up facilities at Mundra Port, Dist. Kutch in Gujarat		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
A. Specific Condition		
1	The company shall submit comprehensive Environmental Impact Assessment Report and Risk Assessment Report containing worst case scenario and detailed oil spill control management plan before carrying out the construction activities and shall implement all the mitigative measures/suggestions/recommendations given in the report of NIO and Tata AIG Risk Management Services.	Complied. Details submitted on 29.05.2014.
2	The company in no case tap ground water.	Entire water requirement is sourced from Narmada water and desalination plant of APSEZL.
3	The company shall not cut mangroves for the project activities except for stray mangrove seeding required for the railway line only after detailed assessment through NIO and 25 acre of land shall be planted with mangroves in consultation with NIO.	Complied. Details submitted on 02.12.2013. Details on mangroves afforestation carried out by APSEZL till date is annexed as **Annexure – 1.**
4	The company shall carry out the mangroves plantation programme in addition to 25-acre mangrove plantation to be done with the help of the NIO, in consultation with the forest department.	
5	The company shall ensure that the construction labors do not cut mangroves for fuel, etc.	Complied. Construction activity is already completed. Details submitted on 02.12.2013.
6	The company shall ensure that no creek are blocked due to the project activities,	Complied. Construction activity is already completed. Details submitted on 02.12.2013.
7	The company shall ensure that there will be no disposal of sullage and sewage generated from construction camps, surface run-off from construction sites, and oil and grease spillage from construction equipment in the creeks.	Complied. Construction activity is already completed.

Half yearly Compliance report of CRZ recommendation for "Port expansion project including dry/break bulk cargo container terminal, railway link and related ancillary and back-up facilities at Mundra Port, Dist. Kutch in Gujarat		
Sr. No.	**Conditions**	**Compliance Status as on 30-09-2015**
8	The company shall stick to the time bound programme submitted to this department for the proposed activities including installation of desalination plant for meeting the entire water requirement.	Entire water requirement is sourced from Narmada water and desalination plant of APSEZL.
9	The company shall ensure that the commercial fisheries are not hampered due to the presence of barges, vessels and other activities in the region. Necessary plan in this regards shall be prepared in consultation with the NIO.	Complied. Fishing boats are having unhindered access to Gulf of Kutch.
10	The company shall bear the cost of the external agency that may appointed by this department for carrying out the supervision and/or the monitoring of the construction activities.	Point noted. Construction activity is already completed.
11	The company shall carry out the post project monitoring of various environmental parameters in consultation with this department and Gujarat Pollution Control Board.	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-2**.
12	The company shall prepare the detailed traffic control management plan for the port and shall participate in the VTMS to be developed for the Gulf of Kachchh.	Complied. Details on the same were submitted on 2.12.2013.
13	In order the eliminate adverse impact on the mangroves of Bocha Island and coastal ecology of the region, the company shall carry out construction activities only after the construction design and methodology is approved by NIO.	Point noted. Construction activity is already completed.
14	Any other conditions may be stipulated by this department from time to time.	Point noted.

Annexure – 1

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**			

Annexure – 2

"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:

POLLUCON LABORATORIES PVT.LTD.
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T 0820 - 821 **ISO 9001:2008** **ISO 14001:2004** **OHSAS 18001:2007**

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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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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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)

H. T. Shah
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POLLUCON LABORATORIES PVT. LTD. SURAT-3

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

SR. NO.	TEST PARAMETERS	UNIT	April 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

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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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POLLUCON LABORATORIES PVT. LTD. SURAT-3

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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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POLLUCON LABORATORIES PVT. LTD. SURAT-3

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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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POLLUCON LABORATORIES PVT. LTD. SURAT-3

Dr. ArunBajpai
Lab Manager (Q)

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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Dr. ArunBajpai
Lab Manager (Q)

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

SR. NO.	TEST PARAMETERS	UNIT	April 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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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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POLLUCON LABORATORIES PVT. LTD. SURAT-3

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

SR. NO.	TEST PARAMETERS	UNIT	April 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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Lab Manager

POLLUCON LABORATORIES PVT. LTD. SURAT-3

Dr. ArunBajpai
Lab Manager (Q)

		/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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Lab Manager (Q)

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

H. T. Shah
Lab Manager

POLLUCON LABORATORIES PVT. LTD. SURAT-3

Dr. ArunBajpai
Lab Manager (Q)

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
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POLLUCON LABORATORIES PVT. LTD. SURAT-3

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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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POLLUCON LABORATORIES PVT. LTD. SURAT-3

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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

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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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POLLUCON LABORATORIES PVT. LTD. SURAT-3

Dr. ArunBajpai
Lab Manager (Q)

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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POLLUCON LABORATORIES PVT. LTD. SURAT-3

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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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Lab Manager (Q)

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

H. T. Shah
Lab Manager

POLLUCON LABORATORIES PVT. LTD. SURAT-3

Dr. ArunBajpai
Lab Manager (Q)

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

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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 %

H. T. Shah
Lab Manager

POLLUCON LABORATORIES PVT. LTD. SURAT-3

Dr. ArunBajpai
Lab Manager (Q)

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

H. T. Shah
Lab Manager

POLLUCON LABORATORIES PVT. LTD. SURAT-3

Dr. ArunBajpai
Lab Manager (Q)

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

H. T. Shah
Lab Manager

POLLUCON LABORATORIES PVT. LTD. SURAT-3

Dr. ArunBajpai
Lab Manager (Q)

Annexure – 3

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 – 4

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

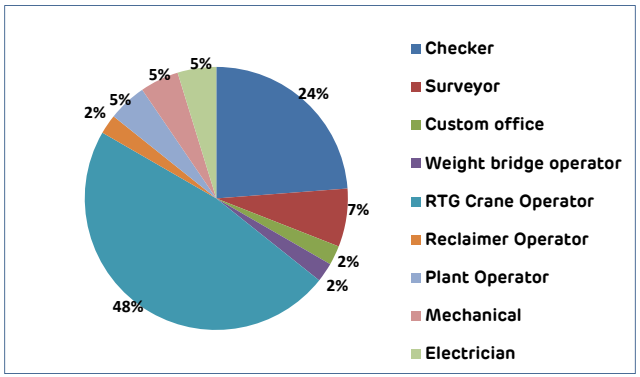
Adani Skill Development Center: Mundra

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 દુઃખ 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 દુઃખાવો નહોતો એટલો દુઃખાવો 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

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

મુન્દ્રાની વાંઢમાં 25 મકાન-સમાજવાડીનું લોકાર્પણ

ભાસ્કર ન્યૂઝ. મુન્દ્રા

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

Media Corner

રબારી જ્ઞાતિના વસવાટવાળા રબારી વાંઢનું લોકાર્પણ થયું

મુંદરા,તા.૪

મુંદરાના સુખપર ગામની સમીપે પુનઃવર્સન દ્વારા નિર્માણ પામેલા રબારી સમાજના ૨૫ નવા આવાસોના ગૃહપ્રવેશ તથા હનુમાનજી મંદિરની પ્રાણ પ્રતિષ્ઠા યોજવામાં આવી હતી.

રેવેન્યુ રેકર્ડમાં સમાવાશે તો વધુ ફાયદો થશે

વર્ષ-૨૦૦૮માં સેઝના નિર્માણ વખતે મુંદરા વાંઢના રબારી સમાજના રહેવાસીઓની જગ્યા વચ્ચે આવતી હતી તેથી મુંદરા વાંઢ પુનઃવર્સન સમિતિની રચના પણ કરવામાં આવી હતી અને પરસપરસ સમજુતી સાધવામાં આવ્યા બાદ ૨૫ મકાનોની ફાળવણી માટે એક યાદી તૈયાર કરવામાં આવી જેમાં મકાનોનું બાંધકામ, શૌચાલય, સામાજીક, શૈક્ષણિક વિકાસ માટે બાલવાડી અને સમાજવાડી પણ બનાવવામાં આવી તેમજ ગામમાં પીવાના પાણી માટે પાણી સંગ્રહની ૧૫ હજાર લીટરના ભુર્ગભ ટાંકાનું તેમજ પશુઓ માટે ૭૩૨૦ લીટર ક્ષમતાવાળા અવાડા, પાકા સીસીરોડ, વીજળીના કનેકશન સાથે ઘરોમાં બનાવી નાનકડુ ગામ વસવાટ તૈયાર કરવામાં આવ્યું હતું જેનું આજરોજ લોકાર્પણ કરવામાં આવ્યું હતું. આ વેળાએ ખાનગી એકમના અધિકારીઓ, રાજ્યમંત્રી સહિતાઓ ઉપસ્થિત રહ્યા હતા. તેમજ હનુમાન જ્યંતિ નિમિતે હનુમાનજીના મંદિરની પણ સ્થાપના કરવામાં આવી હતી. મુકેશભાઈ સક્સેનાએ રબારી ભાઈઓને શુભકામના પાઠવી જો દુધનું ઉત્પાદન એક જગ્યાએથી થશે તો દુધ કેન્દ્ર પ્રસ્થાપિત માટે પણ શુભેચ્છા પાઠવી હતી. માંડણભાઈ રબારી સહિતના ઉપસ્થિત રહ્યા હતા.

શિક્ષણમાં પગલી નહીં, હરણફાળ ભરો

રબારીવાંઢમાં વિવિધ સેવાઓનું લોકાર્પણ કરતા રાજ્યમંત્રીનો સમાજને ટકોર

Media Corner

અદાણી ફાઉન્ડેશન દ્વારા માછીમારો માટે કમ્પ્યુટર ટ્રેનીંગ સેન્ટર તથા મેડીકલ રૂમનું લોકાપર્ણ

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

Media Corner

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.

Adani Foundation, Mundra

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

Adani Foundation, Mundra

Media Corner

માછીમાર પરિવારના બાળકોને ઉચ્ચ શિક્ષણ માટે તત્પર રહેવા ખાતરી

કંઠીપટના માછીમારોને કમ્પ્યૂટર શિક્ષણમાં શ્રેષ્ઠ બનાવવાની નેમ

Adani Foundation, Mundra

Media Corner

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

Adani Foundation, Mundra

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Our Article in Chitralekha

Adani Foundation, Mundra

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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

વિદ્યાર્થીઓને રોજગારી આપવા અદાણી-વીરાયતનનું જોડાણ

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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 સફાઈ અભિયાનમાં આહુતિ અપાઈ

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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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ભૂખી નદીમાં ગાબડાં પડતાં વાહનો અટકયાં

મુંદરા તરબતર; વધુ ચાર ઈંચ

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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

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

અદાણી દ્વારા માછીમારોનાં બાળકોને અભ્યાસ માટે શિષ્યવૃત્તિ અપાઈ

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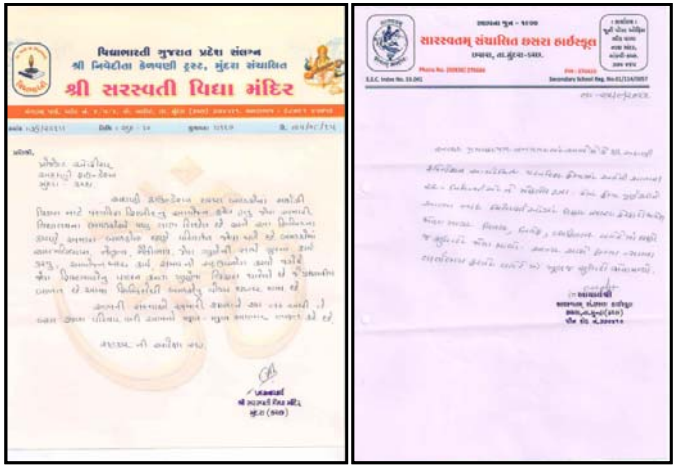
અદાણી ફાઉન્ડેશન દ્વારા મુંદરા તાલુકામાં "બેટી વધાવો બેટી બચાવો" કાર્યક્રમ અંતર્ગત ૨૯ ગામોમાં ૨૯૧ બાળાઓને વધાવવામાં આવી.

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 – 5

MOCK DRILL REPORT

DATE : 07th April2015
TIME : 15:00 Hrs
LOCATION : (CT-3)
SCENARIO : Evacuation Mock drill In case of any emergency.

INTRODUCTION:
Assuming that Mr. Bhavesh Dave (Shift incharge) got a Message from POC, there is emergency and Ct-3 likely needs to be vacated. He informed immediately the emergency situation to CT -3 towers Control @ 1500 Hrs. Simultaneously informed to OHC, Fire, and Safety & Security. POC subsequently intimates the same through message or telephonic to all concern departments.

LOCATION (WITH PHOTOGRAPH): CT-3

SEQUENCE OF EVENTS (WITH PHOTOGRAPHS AND TIME):

Person coming out from the jetty to assembly point by bus:

Ct-3 Mock drill

Evacuated person assembled at the assembly point :

Instruction given at the assembly point:

Action carried out by bhavesh Dave:

CALLING TIME OF THE DRILL

Drill commenced	: 15:00 Hrs
Informed Port Control	: 15:01 Hrs
Called OHC Assistance	: 15:03 Hrs
Called to fire service assistance	: 15:04 Hrs
ERT assistance	: 15:04 Hrs
Safety	: 15:05 Hrs
Engineering Ct-3	: 15:05Hrs

Responding:

Shift Manager rushed the spot	: 15:05Hrs
Ambulance arrived at the spot	: 15:09 Hrs
QHS Department	: 15:10 Hrs
Fire tender reached at the scene	: 15:03 Hrs
Security personnel	: 15:07 Hrs
All Man Power assembled	: 15:23 Hrs
All clear (inform to POC control room)	: 15:30 Hrs

Total number of person working inside the AICTPL-CT-3:

Concern Person work inside the CT-3	Actual Man power of CT-3	Assembled man power CT-3
Superintendent	1	1
Wharf and yard supervisor.	1	1
Driver LMV/HMV	22	22
Security	7	7
RTGC Opt.	21	21
QC	2	2
Checker	22	22
Gate operator	08	08
Surveyor	4	4
Canteen	10	10
ITV supervisors	2	2
Engineering person	52	52
Lasher	15	15
Total	167	167

AREA OF IMPROVEMENT:

- One QC boom was in down condition. (Action to be taken by the operation by imparting training to the concern person).

- No siren facility available inside the Ct-3 wharf and office area.(Action to be taken by the K.P.parmar)

GOOD OBSERVATION:

- Quick response of yard checker and yard supervisor.
- Good response and immediate action by the Fire team and medical team
- Good response and immediate action by the Security team.

VOTE OF THANKS:

Vote of the thanks by Mr. Bhavesh Dave & Mr Nitin Mehta, Mr. Cherian and Mr. Sunder pal and Vinod Rajput given to the special thanks to all team members of mock drill participants.

SUPPORTING STAFF:

Operation & egg CT-3	:	Mr. Bhavesh Dave Paulson joseph Hari deshani
Fire Team	:	Mr. Viren Arya (In charge) & Firemen Staff
Medical Team	:	Mr. Gulam (Medical Assistant)
Security Team	:	Mr. Sanjay rathod (ERT) and Security Guards
QHSE Team	:	Mr. Vinod Rajput (Shift In charge)
Observation Team	:	Mr. Manan Bhatt (QHSE) Mr. Nitin N. Mehta (Head QHSE)

Drill Organized By	: Mr. Paulson joseph
Drill guided By	: Mr. Vinod Rajput
Exercise Performance Assessor	: Mr. Vinod Rajput
Site incident controller	: Mr. Cherian abhram
Report prepared By	: Mr. Vinod Rajput/ Paulson joseph

SUMMARY (OPTIONAL – BUT FOR INTERNAL REFERENCE): Action to be carried out as per our EAP. Is as below.

Expected action As per the EAP Detailed Event.	Action taken	Remarks
Site Main Controller : - Shall ensure all possible assistance to personnel affected for medical attention and hospitalization as appropriate	Has been informed by site incident controller	Done and very well performed
Site Incident Controller Shall immediately assess the scale of emergency and report to Site Main Controller for instructions/ directions and Shall liaise with other heads of department for their support	We informed to authority for assistance.	Performed very well - Informed the concern for mitigation action

and assistance and shall ensure continual reporting of situation to Site Main Controller and shall recommend calling for external resources as appropriate.		
HOS – Administration Shall report to Site Incident Controller immediately and assist him as directed.	2 nos.of buses reported at the side.. Bus reported from the adani. House.	-----transport facility provided by the admin team.
HOD – Human Resources Shall report immediately to Site Incident Controller and assist him as directed.	------	Head count by the shift in charge.
HOD – Corporate Affairs Shall report immediately to Site Incident Controller and assist him as directed.	-------	-------
HOD/ HOS – Engineering Services Shall report immediately to Site Incident Controller and assist him as directed.	Good response of shift in charge and engineering team	Every one participated in the drill.
HOD/ HOS – Commercial shall ensure availability of materials required by the Site Incident Controller.	----	----
HOD/ HOS – Finance & Accounts shall report immediately to Site Incident Controller and assist him as directed.	----	----
HOD/ HOS – Security shall instruct the security personnel to occupy pre-determined post for controlling security of installation.	Shall close the gate and control the man & vehicle movement.	Security restricted entry of the gate for labors and vehicles movement assembly point near Ct-3 main gate.
HOS – Fire Services will normally function as an advisor to the Site Incident Controller.	Fire staff shall reached to site for attending emergency.	Done – reached immediately and attend the emergency.
HOD/ HOS – Safety shall report at Emergency Control Center	Shall assist Site Main Controller with necessary information, support and resources.	Safety officer reached at site and guided the situation.
HOS – Occupational Health Center Contact Site Main Controller.	Reported at site.	Medical staff immediately reached with ambulance.