

PLL/DHJ/MoEF/016

January 21st, 2015

The Director (Environment)
Forests & Environment Department,
Government of Gujarat,
Block No. 14, 8th Floor, Sachivalaya,
Gandhinagar – 382 010
(Fax No.: 079-23252156)

Kind Attn.: Shri Hardik Shah


Subject: Half-yearly Compliance Report with respect to conditions stipulated by Ministry of Environment & Forests, Govt. of India and Department of Forests, Govt. of Gujarat for Construction of LNG Import Terminal (Phase-I) at Dahej, District Bharuch in Gulf of Khambhat, Gujarat as on 31st December, 2014

Ref : (a) J-17011/11/2000-IA-III Dated 27th December, 2000
(b) ENV-10-2000-181-PI Dated 29th September, 2000

Dear Sir,

The Compliance report as on December 31st, 2014 with respect to conditions stipulated by Ministry of Environment & Forests, Govt. of India and Department of Forests, Govt. of Gujarat for Construction of LNG Import Terminal (Phase-I) at Dahej, District Bharuch in Gulf of Khambhat, Gujarat is enclosed.

With regards,


S. Baitalik
Vice President (Projects)

Encl.: As above

Copy to:-

Director,
Ministry of Environment & Forest,
Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi – 110 003

Joint Director (S)
Ministry of Environment & Forests,
Regional Office, Western Region,
Kendriya Paryavaran Bhavan,
Link Road No. 3,
Bhopal – 462 016

CC to:

- CEO & MD – For kind info. Please
- Director (Technical)
- President (Technical)
- Sr. V.P. (Projects)
- Vice President (Plant Head)

COMPLIANCE REPORT TO THE CONDITION MENTIONED IN MOE&F
LETTER NO. J-17011/11/2000-1A-III DATED 27TH DECEMBER, 2000

(A) SPECIAL CONDITIONS

- 1) Necessary approval for diversion of 10.5 ha forest land involved in project shall be obtained under the provisions of the forest (conservation) act, 1980 and a copy furnished to this ministry prior to commencement of construction site.

Complied.

The compliance report submitted vide our letter no.PLL/ND/D7/2K1 dated 6th September 2001.

- 2) The plant layout shall be so planned to ensure that no portion of LNG storage and re-gasification facilities fall within CRZ I (1).The final layout plan along with demarcation of CRZ area and their classification shall be submitted to this ministry commencement of construction site.

Complied.

Facilities such as LNG storage and re-gasification construction completed and plant is under operation since April-2004. Layout plan submitted with our letter no. PLL/ND/D-7/2K1 dated 16th August 2001.

- 3) No change in the scope of work shall be made without prior approval of this ministry.

Noted. Construction works completed without any change in the scope of works.

- 4) No dredging (capital or maintenance) shall be carried out in the project. If at any stage, necessary of dredging is felt, specific approval for the same shall be obtained.

No dredging has been carried out or planned to be carried out in the near future.

- 5) A proper location map clearly showing the various project activities with respect to high tide line (duly demarked by one of the authorized agencies) and the corresponding CRZ classification of the area shall be furnished within one month.

Baitalik

The location map, prepared by M/s National Institute of Oceanography, showing various project with respect to high tide line and the corresponding CRZ classification of the area was submitted vide our letter No PLL/ND/D-7/2K1 Dated 16th August 2001.

- 6) A quantitative risk analysis of the LNG terminal associated facilities shall be carried out taking into account the worst case scenario and based on firmed up engineering design. The report should be submitted within 6 months. The central control room should be located well outside the risk zone.

The quantitative risk analysis (QRA) report submitted vide our letter No PLL/ND/D-7/2K2 dated 18th January 2002. The control room is located outside the risk zone.

- 7) Based on risk analysis, Disaster Management plan should be prepared and submitted to this ministry within 6 months.

The disaster management plan was submitted vide our letter no PLL/ND/D-7/2K2 dated 18th January 2002.

- 8) A classification may be obtained from state pollution control board to the effect that the NOC issued by them is for entire project and not restricted to two storage tanks. This may be provided within one month.

Gujarat Pollution Control Board (GPCB) vide their letter no BRCK-NOC-S/40(1948)6721 dated 15th February, 2001 have clarified that the NOC granted by the Board is in respect of the entire LNG project (LNG receipt, storage, re-gasification) including the following components:-

- (i) Construction of Jetty**
- (ii) LNG Storage Tanks (2 Nos.)**
- (iii) Pumping & re-gasification facilities**
- (iv) Utilities**

GPCB have been further informed vide their letter no PC/BRCH-CCA-611 that the NOC granted by them is also for two additional storage tank in Phase-II

- 9) The details of the facilities to be provided by the company to the local population may be furnished within one month.

The details were provided vide our letter no PLL/ND/D-7/2K2 dated 18th January 2002.

Baitalik

- 10) The project proponent should be make specific arrangement for rainwater harvesting in the project design and the rainwater so harvested should be optimally utilized.

The LNG terminal has been set-up very near to the coastline at Dahej, where water table is very high. Moreover the seawater is brackish in that area. Investigations indicates that it might not be feasible to carry out rainwater harvesting in this area,

The process water requirement in LNG terminal at Dahej is NIL. The sanitary water is being recycled for irrigation of green belt.

- 11) All the conditions stipulated by the Forest and Environment Department of Gujarat vide their letter no.ENV-10-2000-181-P1 dated 29th September 2000 should be effectively implementer.

Compliance status is enclosed at Annexure –II.

- 12) All the conditions stipulated by Gujarat Pollution Control Board in their NOC should be effectively implemented.

Noted and complied. Consolidated consent and authorization obtained under Water Act 1974, Air act 1981 and Environment (Protection) Act vide GPCB consent order No 3936 dated 28th September 2004.

- 13) The jetty will be constructed on piles to enable the free flow of water across the jetty.

The confirmation regarding construction of jetty on piles has already been sent vide letter no. PLL/ND/D-7/2K2 dated 18th January 2002.

- 14) The construction of material shall be obtained only from approved quarries. In case new quarries need to opened up specific approval for the same shall be obtained.

Noted and complied.

Santali

(B) GENERAL CONDITION

- 1) Construction of the proposed structures should be undertaken meticulously confirming to the exiting central/local rules and regulations including CRZ notification 1991 & its amendments. All the construction designs / drawings relating to proposed construction activities must have approval of the concerned state government department /agencies.

Complied.

The construction and commissioning of the facilities at Dahej completed and the plant is operational since April-2004.

- 2) The proponent shall ensure that a result of the proposed construction, ingress of the saline water in to the ground water does not take place. Piezometer for this purpose at appropriate locations on the project site.

Complied.

During construction no water was drawn from ground & no ingress of saline water took place.

- 3) Handling, manufacturing, storage and transportation of all hazardous chemicals should be carried out in accordance with MSIHC rule 1989 and subsequent amendments. All the approvals from state & central nodal agencies including OISD chief controller of explosives, chief inspectorate of factories must be obtained. A comprehensive contingency plan in collaboration with the concerned authorities must be formulated before commissioning of the project to meet any eventuality in case of an accident.

Noted.

All relevant approvals of state and central nodal agencies, CCOE, CIF for construction and operation of the facilities are in place. Emergency response plan is in place.

- 4) 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 prescribed standards. The will also equipped with qualified manpower including a marine biologist so that 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 seasons and the results should be properly maintain and for the inspection of the concerned pollution agencies. The periodic monitoring reports at least once in 6 months must be sent to this ministry (Regional office at Bhopal) and SPCB.

Noted.

Environment monitoring is being carried out through GPCB approved outsourcing agencies as per GPCB guidelines. Analytical report is enclosed as Annexure- III.

Baitalik

- 5) Adequate provisions for instrumentation facilities such as water supply, fuel for cooking, sanitation etc. must be provided for the laborer during the construction period to avoid the 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.

Noted.

The construction and commissioning of the facilities at Dahej completed and plant is already operational since April-2004.

- 6) To prevent discharge of sewage and other liquid wastes into the water bodies, adequate system for collection and treatment of wastes must be provided. No sewage and other liquid wastes without treatment should be allowed to enter in to water bodies.

Complied.

- 7) Appropriate facility should be created for the collection of solid & liquid wastes generated the barges/ vessels and their safe treatment and disposal should be ensured to avoid possible contamination of the water bodies.

Contracts for engaging the vessel stipulate that the vessels comply with these requirements including MARPOL. Besides LNG vessel is berthed for 24 hours only and it is equipped with incinerator and sewage treatment.

- 8) 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 movement.

Complied.

Necessary navigational aids have been provided and all safety measures as per international standards are being followed in case of vessel movement.

- 9) 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.

PLL has constructed a temple at the site for the local people and has contributed towards infrastructure in the area for roads and drinking water.

Community development and welfare measures are taken. Village Luwara has been jointly adopted along with another nearby industry, as directed by PCPIR Welfare Society. Separate fund allocated for CSR.

Santali

Some of the schemes completed/under progress are Health Center (construction & operation), drainage and provision of street lights at Village Luwara. Rupees 75 lakh contributed to PCPIR Welfare Society. Two ladies from Luwara village sponsored for nursing course at Vidhyadeep Community college, Bharuch. Sponsored construction of Sanitation scheme at village Muller. Active participation in other Government initiated community development programs.

Installed 10 nos. Emergency solar lighting at prominent places in village Luwara. Donated Rs.1 lac for Bharuch District Civic centre development. Participated in Govt. scheme on KanyaKelvani. Installation of drainage crossings to remove accumulated water at 4 locations within the village Luwara at a cost of Rs. 0.8 lacs. Construction of approach road in village Lakhigaon, Dahej.

PLL has sponsored 'MatariaTalav drinking water project' of the Bharuch Municipality Corporation. This project is for the supply of sweet drinking water from the Narmada River to the residents of Bharuch city. MD&CEO handed over cheque for Rs. 25 Lacs to the Collector, Bharuch on 13/06/2011 and further, PLL added Rs. 20 Lacs for the 'MatariaTalav drinking water project'

PLL installed 50 nos. Emergency solar lighting at prominent places in village Luwara & 10 nos. Emergency solar lighting at prominent places in village Lakhigam of Vagra Taluka in Bharuch District. Provided School Bus to Primary School at Lakhigam Village and also running Primary Health Center at Luwara Village. PLL constructed Bus-stand and extended Gram Panchayat Bhavan building at Luwara Village.

PLL installed 25 Nos. of Solar lights at prominent places in village Lakhigam and Luwara. Contributed Rs. 20 Lakhs in Akshay Patra mid-day meal scheme at villages in and around Dahej location. Also, contributed Rs. 10.00 Lakhs in Gujarat Lion Conservation Society towards procurement of Vehicle.

Primary health services to Luwara village, Gynec health and Pulse Polio campaign (Pakhajan PHC). PLL supported noble cause of Construction of Storm water drainage at Shravan Chokdi to Jambusar by pass (over bridge) in Bharuch. This project is executed under District Collector office.

Request from CDHO (Chief District Health Officer) was received to participate in various health initiatives. PLL agreed during meeting with DM to provide the ambulance for PHC, Pakhajan Village of Vagra Taluka. PLL is supporting Luwara School for reference books, uniform, school picnic and creating awareness on environment, health, safety and security aspects through various programs regularly, rewarding bright students etc.

Baitalik

Bharuch has problem of solid waste management and garbage disposal. To improve on cleanliness of the town, PLL is supporting initiative of GREEN BHARUCH CLEAN BHARUCH by donating two dumper placer worth Rs. 23.94 Lakh.

Due to delay in recruitment of teachers, primary schools in and around Dahej has 40% teaching staff. To support education by deploying young educated teachers, PLL sponsored 14 teachers in 4 schools of villages of Dahej, Lakhigam and Luvara.

PLL constructed 11hosues of homeless tribes in Luvara village at a cost of 25 Lakh. PLL initiated drive to make Luvara open defecation free by sponsoring toilets for 172 houses at a cost of Rs. 17.2 Lakh.

- 10) The quarrying material required for the construction purposes shall be obtained only from the approved quarries/borrow areas. Adequate safeguard measures shall be taken to ensure that the overburden and rocks at quarry site do not find their way into water bodies.

Noted and complied.

- 11) The dredging operation to be undertaken with the prior approval of the ministry, shall be executed with appropriated safeguard measures to prevent turbidity conditions in consultation with the expert agencies such CWPRS/NIO.

No dredging has been carried or planned to be carried out in near future.

- 12) For employing unskilled, semiskilled and skilled workers for the project, preferences shall be given to local people.

PLL has recruited fair number of local people. For ancillary and support functions as security services, fire fighting, and green belt maintenance etc. PLL is giving preference to local people. Housekeeping contract has been awarded to local Lakhigam village contractor.

- 13) The recommendation made in the environment management plan and disaster management plan, as contained in the EIA and risk analysis reports of the project shall be effectively implemented.

Noted

- 14) A separate environment management cell with suitably qualified staff to carry out various environment related functions should be set up under the charge of senior executive who will report directly to the chief executive of the company.

Complied. Health safety and environment management cell exists at site.

Mantali

15) The project affected people, if any should be properly compensated and rehabilitated

Complied

16) The funds earmarked for environment protection measures should be maintained in the 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 the ministry.

Noted for compliance.

Rs. 105 Lac spent for development of Green Belt during the year 2004-05.

Rs. 33.22 Lac spent for development of Green Belt and Mangrove Plantation during the year 2009-10.

Rs. 50 Lac spent for development of Green Belt and Mangrove Plantation during the year 2010-11.

Rs 93.31 Lacs spent for development of Green belt. /Mangrove plantation during the year 2011-2012

Rs. 109.57 Lac spent for development of Green Belt and Mangrove Plantation during the year 2012-13.

Rs. 95.20 Lac spent for development of Green Belt and Mangrove Plantation during the year 2013-14.

Budgeted Rs. 94.48 Lacs for development of Green Belt and Mangrove Plantation during the year 2014-15. Of which, PLL spent Rs. 45.78 lac for development of Green Belt and Mangrove Plantation till 31.12.2014.

17) 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.

Noted and Agreed

Baitalik

18) In case of deviation or alteration in the project including the implementing agency, a fresh reference should be made to the ministry or modification in the clearance conditions or impositions of new ones for ensuring environmental protection. The project pronouncements should be responsible for implementing the suggested safeguard measures.

Noted and Agreed

19) The ministry reserves the right to revoke this clearance, if any of re condition stipulated or not complied with to the satisfaction of this ministry.

Noted and Agreed

20) 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.

Noted and Agreed

21) 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 on the locality concerned informing that the project has been accorded environmental clearance and copies of clearance letters are available with state pollution control board and may also been at web site of the ministry of environment & forest at <http://www.envfor.nic.in>

Noted and complied.

22) 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 the land development work.

Complied. Project is now completed. Plant is under operation since April-2004.

Saitalika

ANNEXURE II

**Response to Department of Forest & Environment Letter No. ENV-10-2000-181-P1,
Dated 29th September, 2000**

1. No activity shall be commenced before obtaining the necessary permissions under the forest (Conservation) Act.

Complied

2. The applicant shall not tap the groundwater in any case.

Complied

3. The applicant shall implement all the suggestions/recommendations given by the NIO in their rapid Marine Environment Impact Assessment Report.

Agreed & complied

4. The applicant shall appear and submit the comprehensive Marine EIA report including the study for the long term impacts due to construction of breakwater and jetty, before commencing the project activities.

The clarifications were provided vide our letter ref PLL/ND/D-7/2KI dated 5TH February 2001.

5. The applicant shall implement all the suggestions/recommendations given by the ONGC and the WAPCOS in their comprehensive EIA Report.

Agreed

6. The applicant shall submit the detailed Risk assessment Report containing the worst case scenario and detailed Oil Spill Contingency Plan before commissioning the project and shall implement all the suggestions/recommendations given in the report.

Complied

Maitalib

7. The applicant shall adhere to the provisions of National Oil Spill and Disaster Management Plan and shall install all necessary facilities and equipment for controlling and combating the oil spill, before commissioning the operation.

Complied

8. The applicant shall participate financially for the Regional Environment Impact Assessment of the Dahej region.

Agreed

9. The applicant shall bear the cost of the external agency appointed by this department for carrying out supervisor and/or monitoring of the construction and/or operation activities.

Agreed

10. The applicant shall ensure that the construction labors do not cut the mangroves for the fuel etc. Necessary amenities, including fuel, water supply and sanitation would be provided to the construction labors.

Complied. The construction has been completed and the terminal commenced commercial operations from 9th April 2004.

11. The camps of the construction labors shall be kept outside the CRZ area.

Complied

12. The applicant shall ensure that free flow of water is not hampered due to any project activities.

Complied

13. The applicant shall ensure that there will be no disposal of sullage and sewage generated from construction camps, surface run-off from construction sites, and grease spillage from construction equipment into the sea or the CRZ area.

Complied

14. The applicant shall carry out mangrove plantation in consultation with forest department.

Agreed

Maitalik

15. The applicant shall carry out the monitoring of the various environmental parameters in consultation with Gujarat pollution control Board/Forest and Environment Department.

Agreed

16. The Gujarat Maritime Board shall prepare the detailed Traffic Control Management Plan for the Dahej port and the gulf of Khambhat in consultation with respective port companies including PLL, Indian Petrochemicals Corporation Limited and would made effective before commissioning of the activities of the PLL.

Gujarat Maritime Board has established VTS System and PLL is complying all norms as per Gujarat Maritime Board.

17. The applicant shall actively participate in the vesselTraffic Management System (VTMS) to be developed for the Gulf of Khambhat.

Agreed

18. The applicant shall implement socio-economic up-liftmentprogramme in consultation with District Collector/DDO.

Agreed

19. No construction activities shall be commenced before obtaining all necessary clearances under various acts/ rules from different Govt. department /agencies.

Noted

20. Any other conditions as may be stipulated by this department from time to time.

Agreed

Maitalik.

ANNEXURE - III

AMBIENT AIR QUALITY STATUS REPORT

All units are in $\mu\text{g}/\text{m}^3$.

Sr.no.	Month	PM10		PM2.5		SOx		NOx		HC as Methane CH ₄	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
	NAAQ norms	100 $\mu\text{g}/\text{m}^3$		60 $\mu\text{g}/\text{m}^3$		80 $\mu\text{g}/\text{m}^3$		80 $\mu\text{g}/\text{m}^3$		Absent	
1	Jan-14	110.00	158.00			9.50	19.40	18.70	36.90	0	0
2	Feb-14	138.00	178.00	35.80	78.70	6.90	12.40	18.90	30.30	0	0
3	Mar-14	116.00	171.00			7.50	12.10	18.80	29.90	0	0
4	Apr-14	115.00	181.00			8.00	13.50	15.50	31.50	0	0
5	May-14	115.00	175.00			6.50	10.30	14.10	32.50	0	0
6	Jun-14	138.00	196.00			5.90	14.70	18.60	42.70	0	0
7	Jul-14	52.00	81.00	24.00	30.00	9.26	11.40	9.92	12.44	0	0
8	Aug-14	55.00	71.00	23.00	30.00	9.26	13.84	14.54	18.34	0	0
9	Sep-14	31.00	64.00	19.00	28.00	8.49	13.89	13.69	16.49	0	0
10	Oct-14	59.00	70.00	18.00	24.00	10.03	10.08	12.86	16.80	0	0
11	Nov-14	31.00	115.00	10.00	31.00	6.80	17.40	13.60	19.80	0	0
12	Dec-14	34.00	160.00	8.00	69.00	6.90	17.50	6.50	20.20	0	0
	Range	31 - 196		8 - 78.7		5.90 - 19.40		6.50 - 42.70		0 - 0	

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ANNEXURE - III

STACK EMISSION AIR QUALITY STATUS REPORT

All units are in mg/Nm³.

Sr.no.	Month	GTG			DG SET			FIRE ENGINE		
		SPM	SO _x	NO _x	SPM	SO _x	NO _x	SPM	SO _x	NO _x
	GPCB norms	150	100	50	150	100	50	150	100	50
1	Jan-14	11.30	2.80	22.90				31.80	3.60	16.90
2	Feb-14	BDL	BDL	17.80	16.80	2.00	9.60	32.20	3.10	20.40
3	Mar-14	12.00	1.80	19.50	34.10	2.80	18.00	32.80	3.10	16.40
4	Apr-14	BDL	BDL	15.60	26.40	2.00	14.60			
5	May-14	BDL	BDL	14.99	30.77	2.44	15.29	35.26	2.73	20.07
6	Jun-14	BDL	BDL	17.46	20.60	1.95	20.39			
7	Jul-14	20.00	BDL	6.52						
8	Aug-14	37.00	BDL	5.12				30.00	BDL	4.89
9	Sep-14	44.00	0.30	5.19	49.00	0.30	3.87			
10	Oct-14	28.00	0.30	3.73	37.00	0.30	4.56	33.00	0.30	4.42
11	Nov-14	26.00	BDL	4.20	55.00	BDL	5.40	38.00	BDL	4.70
12	Dec-14	27.00	BDL	4.00	36.00	0.30	4.20	40.00	0.30	3.90
	Range	BDL - 44	BDL - 2.8	3.73 - 22.90	16.80-55	BDL-2.80	3.87-20.39	30-40	BDL-3.60	3.9-20.40

BDL: Means Below Detection Level.

Signature

ANNEXURE - III

NOISE LEVEL REPORT

Sr.no.	Location	Unit	Limit	Jan-14		Feb-14		Mar-14		Apr-14		May-14		Jun-14		Jul-14		Aug-14		Sep-14		Oct-14		Nov-14		Dec-14	
				L-day	L-night	L-day	L-night	L-day	L-night	L-day	L-night	L-day	L-night	L-day	L-night	L-day	L-night	L-day	L-night	L-day	L-night	L-day	L-night	L-day	L-night	L-day	L-night
1	North	decibel	Day-75 db Night-70db	68.3	48.8	56.8	52.7	63.2	49.8	62.3	62.1	62.3	58.6	59	58.1			55.3	45.5			63.9	61.3	59	59.3	60.8	59.8
2	East	decibel	Day-75 db Night-70db	66.4	53.7	53.7	51.3	59.4	51.5	60.5	59.5	60.5	56.2	56.3	54.2			60.4	46.3			61.2	59.4	60.6	61.9	58.8	59.1
3	West	decibel	Day-75 db Night-70db	64.2	52.3	59.7	54.4	62.4	52.3	63.7	60.3	63.7	57.9	58.6	56.3			57.2	48.2			65.7	63.3	59.2	60.1	62.2	65.9
4	South	decibel	Day-75 db Night-70db	72.2	49.2	58.2	51.6	58.2	50.9	61.2	58.4	61.2	55.5	58.3	53.4			56.3	52.1			64.3	62.1	57.6	58.8	58.8	58.6

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ANNEXURE - III

GROUND WATER QUALITY STATUS REPORT

Sr.no.	Parameter	Unit	Jan-14		May-14		Aug-14		Nov-14	
			GW1	GW2	GW1	GW2	GW1	GW2	GW1	GW2
1	Temperature	*C	29	29	29	29	31	31	28.5	26.2
2	PH	-	8.13	8.18	8.39	8.45	7.69	7.73	7.23	7.41
3	Total Dissolved Solids (TDS)	mg/L	4614	4532	3270	3270				
4	Chlorides as CL	mg/L	1820	1800	1325	1299	2382	1787	2303	1747
5	Sulphate as SO4	mg/L	97.89	72.13	71.26	52.04	645	1479	467	1520
6	BOD (3 days @ 27°C)	mg/L	ND*	ND*	ND*	ND*	6	5	7	4
7	COD	mg/L	26.58	ND*	18.14	ND*	20	16	24	12
8	Oil & Grease	mg/L	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
9	Phenolic Compound	mg/L	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
10	Zinc as Zn	mg/L	0.076	0.082	0.055	0.058	0.1	0.1	0.1	0.1
11	Total Chromium as Cr+3	mg/L	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
12	Lead as Pb	mg/L	ND*	ND*	ND*	ND*	0.1	0.1	0.1	0.1
13	Cyanide as CN	mg/L	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
14	Flouride as F	mg/L	ND*	ND*	ND*	ND*	0.34	0.49	0.59	0.43
15	Copper as Cu	mg/L	1.18	1.05	0.86	0.76	0.08	0.08	0.08	0.08
16	Insecticide	mg/L	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
17	Pesticide	mg/L	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
18	Mercury as Hg	mg/L	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
ND*: Not detected										

Prasanna

Mangrove Plantation (50 ha.) at Nada Coast during 2009-10



Mangrove Plantation (100 ha.) at Ankalva Coast during 2010-11



Mangrove Plantation (200 ha.) at Ankalva Coast during 2011-12



Mangrove Plantation (200 ha) at Ankalva Coast during 2012-13



Mangrove Plantation (100 ha.) at Bhavnagar Coast during 2012-13



Mangrove Plantation (200 ha.) at Bhavnagar Coast during 2013-14



Mangrove Nursery Preparation for 200 ha. Plantation at Bhavnagar Coast
During 2014-15

