Comprehensive Environmental Pollution Abatement Action Plan Vatva Industrial Cluster - Gujarat

Gujarat Pollution Control Board
Gandhinagar
2010

INDEX

	Foreword	**1**
Chapter – 1: Introduction		**2 - 6**
1	Declared Policy Points for Pollution Control (Pillars of Action Plan)	3
2	Recent Infrastructure Expansion in the State	5
3	Environmental Infrastructure Facilities in the State	6
Chapter – 2 : Need and Methodology of the Plan		**7 - 9**
1	Need of the Action Plan	8
2	Objective and Scope of the Plan	8
3	Methodology	9
4	Stakeholders	9
Chapter -3 : Vatva Industrial Cluster		**10 - 27**
1	Brief History of the Cluster	11
2	Estate at a Glance with Geological area & Impact zone	11
3	EMS Provided by the Industries	11
4	Environment Track Record of the Cluster	12
5	Probable Pollutants	12
6	Management of Wastes	13
7	Surrounding Environment	13
8	Environmental Status	13
9	Environmental Issues	18
10	Existing Environmental Infrastructure	19
11	Environmental Infrastructure Need	26
12	Monitoring Protocol	26
13	Drawing of Action Points	27
Chapter -4 : Narol Industrial Cluster		**28 - 40**
1	Brief History of the Cluster	29
2	Estate at a Glance	29
3	EMS Provided by the Industries	30
4	Environment Track Record of the Cluster	30
5	Probable Pollutants	31
6	Management of Wastes	31
7	Surrounding Environment	31
8	Environmental Status	31
9	Environmental Issues	36
10	Existing Environmental Infrastructure	37
11	Environmental Infrastructure Need	40
12	Monitoring Protocol	40
13	Drawing of Action Points	40

Chapter – 5 : New Initiatives		**41**
Chapter – 6 : Action Plan for Vatva & Narol		**43 - 61**
Chapter – 7 : Effect on CEPI		**62 - 65**
Annexure – 1	Treated w/w quality at CETP, Vatva	66
Annexure – 2	Ambient Air Quality at CETP, Vatva	67
Annexure – 3	Water Quality of Borewell of Vatva Estate	68
Annexure – 4	Treated w/w quality at CETP Narol	69
Annexure – 5	Ambient Air Quality at Narol.	70
Annexure – 6	Water quality of River Sabarmati at Miroli	71
Annexure – 7	Treated w/w quality of STPs	72-74
Annexure - 8	Map showing geographical location and Impact Zone	75
Annexure - 9	Compliance status of suggestions /comments of steering committee	76

FOREWORD

Need of action plan is justified to control pollution in any area where pollution sources are identified, pollutants are measured, assessed and found exceeding permissible limits. To implement such action plans is a duty of any SPCB and all concerned agencies/stakeholders.

After declaration of critically polluted areas by OMs dated 13.1.2010 and 15.3.2010 of MoEF, GOI and imposing temporary moratorium for a period upto August 2010, the action plans for these specified areas (industrial clusters) are desired by the CPCB and MoEF, GOI.

In Gujarat, six areas – Ankleshwar, Vapi, Ahmedabad, Vatva, Bhavnagar and Junagadh – are identified by above OMs as critically polluted. GPCB started quick actions, expanded its infrastructure, decided and declared main points to control pollution at source, prepared action plans including these points and finalized the same in consultation with main stakeholders and issued necessary directions. These action plans were sent to MoEF on 19.4.2010. Meanwhile, by letters dated 19.4.2010 and 18.5.2010, CPCB suggested TOR to make the action plans. Accordingly the action plans are revised.

Consultative meetings were held with various stakeholders including the industries associations, CETP/TSDF operators, NGOs, CPCB and GIDC authorities, who have helped to improve the action plans.

We are thankful to the CPCB and MoEF to have recognized the wholehearted efforts by GPCB team, DoEF, GIDC, VW&EMCL industries of Vapi and all other concerned.

We are hopeful that this will serve the purpose and help various agencies/ authorities to implement and monitor the Action Plans for the six industrial clusters/ areas of the state.

We are also hopeful that the implementation of these Action Plans would bring in the positive results in other clusters also.

Place: Gandhinagar
Date: 30-10-2010

Dr.K.U.Mistry
Chairman, GPCB

Chapter-1
Introduction

Object of this chapter is to describe in brief the actions initiated by Gujarat after OM dated 13.1.2010 declaring critically polluted areas in the country.

It is worth mentioning that Gujarat is a fast developing State and has concentration of chemical units in certain areas, which have more pollution potential and hence the State has created more pollution control infrastructure also.

1. DECLARED POLICY POINTS FOR POLLUTION CONTROL (PILLARS OF ACTION PLANS):

During February to May 2010, following main points of pollution control were widely published and circulated to industries associations for further communication to their member industries. Some of these points were also published as 'Public Appeal' on 1.2.2010 and as 'General Improvement Notice' on 20.2.2010 in three leading newspapers of Gujarat. These are the points specific to nature of industries in the State and main pillars of action plans. These briefly stated points have to incorporate detailed procedure and planning for their floor level compliance and are under gradual execution by due deliberation with concerned stakeholders.

1. To measure and control discharges to ETP and CETP, each outlet of ETP and each inlet and outlet of CETP shall have standard flow meter and flow recorder. Only one authorized outlet will be allowed. SCADA system will be required for CETP.

2. Waste generation streams shall be identified from the process plant and collected separately to decide about their treatability. The collected effluent should be subjected to proper treatment method before discharging it to ETP or CETP. Big units (discharge >100 KLD) should have their own incinerator/ evaporator/ dryer/solvent distillation plant, acid handling or recovery plant etc to make the treated waste reusable or to reduce the load on ETP or CETP.

3. All units including zero discharge units should have pH correction and SS removal system, so that they cannot discharge

any acidic effluent to CETP or to any unauthorized disposal point. Where spent or mixed acid is generated in large quantity, plan for its recovery or re-use or to send it to authorized place will be required.

4. By-pass system for untreated effluent, stack emission or pumping station shall not be allowed. Adequacy and efficacy certificate will be required for ETP, CETP and APCM.

5. Dual disposal modes i.e. pipeline and truck/tanker vehicle shall not be allowed to any unit. Only one safer mode of disposal should be selected.

6. All big units having more than 100 KLD discharge should have their own treatment plant to meet with the GPCB norms. They should use the technology to run their treatment plants independently.

7. CETP will be required for each industrial cluster for effluent treatment and safe disposal. No direct discharge in GIDC pipeline or any disposal point will be permitted. Narol, Jhagadia, Khambhat, Dahej, Vilayat, Sarigam, Jetpur, Junagadh, Jamnagar etc. will need CETP on this principle.

8. Interlocking system (e.g. TOC sensing, trip, alarm and safe diversion) should be provided by all big units (discharge > 100 KLD) and CETP to control their excessive hydraulic and pollution discharge.

9. More than one source of water intake will generally be discouraged. Ground (borewell) water source should be stopped if pipe water source is available. Metering system for water consumption should be implemented.

10. Domestic waste will not be allowed in industrial effluent pipeline. Septic tank, STP or separate pipeline will be required for that purpose.

11. Only authorized fuel shall be permitted to reduce air pollution. Where natural gas is available, no other fuel should be used by industry. Wood as fuel is not at all permitted. More chimney height will be required for more dispersion and dilution.

12. Proper APCM – bag filters, ESP, local exhaust ventilation, scrubber, flare, column-condenser, vent chiller etc shall be required in working condition to reduce gas emission, flying particles, dust, ash etc in air.

13. All TSDF sites will be required to follow the guidelines regarding quantity and time period of waste retention, working of incinerator, sheds for wastes segregation, leachate treatment

facility, storm water drain, dyke for liquid tanks, non-acceptance of plastic waste at landfill site, fire fighting facility, information and record of all wastes at site and no dumping of unauthorized waste in active cell etc.

14. Cleaner production options will be required at CTE/CCA levels. They may be suggested also. Its implementation will be monitored.

15. Plan for reduce, recycle, reuse and recover of resources and trade wastes will be required from each industry. Plans to reduce CO_2 emission, ground water recharging, rain water harvesting, water and electricity conservation and reduction of noise, vibration and plastic wastes will also be required with CTE application. It will be monitored till CCA continuation.

16. Baseline data of land, water and air will be required with CTE application and its status report will be required with annual report to GPCB.

17. Plan to use solar or wind energy for lighting / heating purpose will be required.

18. Transportation of hazardous wastes for a longer distance or throwing at unauthorized place will not be allowed. It will be transported in authorized and covered trucks only.

19. Tree plantation plan will be required and monitored from each unit.

20. Regular monitoring of water and ambient air quality in different areas will be carried out.

2. RECENT INFRASTRUCTURE EXPANSION IN THE STATE:

To have vigorous and intensive monitoring of pollution control laws in the State and for speedy execution of action plans, following steps have already been taken in the State during last two months:

1. Five new GPCB offices are opened at Ankleshwar, Gandhinagar, Himmatnagar, Surendranagar and Porbandar. Including these, now GPCB is functioning at 18 places - (1) Gandhinagar (2) Ahmedabad, (3) Nadiad (4) Vadodara (5) Godhara (6) Bharuch (7) Ankleshwar (8) Surat (9) Vapi (10) Mehsana (11) Himmatnagar (12) Surendranagar (13) Rajkot (14) Bhavnagar (15) Jamnagar (16) Porbandar (17) Junagadh and (18) Bhuj.

2. Three new vigilance teams (Zonal Offices) are started at Surat, Vadodara and Rajkot. Now, total four such vigilance teams are

stationed at Gandhinagar, Surat, Vadodara and Rajkot. These teams are equipped with new vehicles and staff.

3. Two new laboratories are started at Mehsana and Bhuj. Now, total at 9 places, GPCB has its own laboratories for sample analysis – Gandhinagar, Vadodara, Bharuch, Surat, Vapi, Mehsana, Rajkot, Jamnagar and Bhuj.

4. Fourteen new vehicles (four-wheelers) have been purchased and allotted to new offices and vigilance teams.

5. 67 new officers are being recruited to GPCB strength. Application receiving process is over and selection procedure is about to start.

6. Full time Chairman from 20.1.2010 and full-time Member Secretary from 21.6.2010 are given by the State to strengthen GPCB.

7. New four storeyed building is at the stage of completion near the existing building of Head Office at Gandhinagar. This will accommodate more and multifarious activities of pollution control from Head Office of GPCB.

8. New Sections of R&D, Cleaner Production options, training & development, environment awareness and award scheme are started at Head Office.

9. New Data Collection Forms are issued and being filled by field visits to record current status of all units. This will also reveal changes made at site.

10. New ambient air quality monitoring station is started at Chitra (Bhavnagar) on 25.6.2010 to monitor $PM_{2.5.}$

11. GPCB is actively participating in Door Darshan TV programs sponsored by MoEF, GOI, to create statewide awareness on environment and pollution control aspects.

12. On-line computer system (XGN) of GPCB has won second prize at National level for e-Governance programme in India and other States inquire to follow this.

13. Planning has been done to procure new laboratory equipments for strengthening of analysis of pollutants.

14. Barcode system for sample containers is introduced.

15. GPCB has received ISO: 9001 and ISO: 14001 certificates and training is being given to staff for internal audit of all its offices.

16. GPCB has reconstituted Technical Committee of Board Members and outside experts to discuss and decide upon the cases of the change of product mix and some typical applications from critically polluted areas.

3. ENVIRONMENTAL INFRASTRUCTURE FACILITIES IN THE STATE:

Comparatively, more environmental infrastructure facilities (CETP, FETP, TSDF, Incinerators, Pipe conveyance etc.) for pollution control are setup and functional in Gujarat.

Following Table provides, at a glance, pollution control facilities existing in the State:

No.	Facility	Total No.
1	ETPs	5808
2	Individual incinerators	41
3	Individual TSDF	15
4	Individual pipe conveyance to sea	18
5	CETPs	26
6	FETP	01
7	Common TSDF with incinerators	04
8	Common TSDF without incinerators	04
9	Common pipe conveyance to sea	05
	TOTAL	**5922**

31 New MoUs are done to invite more such common facilities.

SOME FACILITIES AT INDUSTRIAL CLUSTERS:

Cluster wise facilities are mentioned in respective action plan of the industrial cluster.

Chapter-2

Need and Methodology of the Plan

1. NEED OF THE ACTION PLAN :

Central Pollution Control Board (CPCB) in collaboration with Indian Institute of Technology (IIT), Delhi and other institutes formulated the concept for Comprehensive Environmental Pollution Index (CEPI) and has analyzed the environmental status of industrial clusters which were identified in consultation with Ministry of Environment and Forests for CEPI analysis. These clusters have been classified as very critically polluted having CEPI score above 80, critically polluted having CEPI score above 70.

Vatva, Ahmedabad, Gujarat is having overall CEPI as 74.77 which is above the criterion for critically polluted CEPI score. This has created a need for detailed study for the critically polluted industrial cluster of Vatva & Narol, Ahmedabad, Gujarat in terms of extent of damage and formulation of appropriate remedial action plan enabling abatement of pollution and restoring the environmental quality of this cluster.

Gujarat Pollution Control Board (GPCB) has prepared this report keeping in view the Terms of Reference (ToR) given by CPCB. GPCB has generated and analyzed the data from primary and secondary sources, which is utilized to draw action points and finalize the action plan. This action plan definitely will improve the situation in the given cluster and help in reducing CEPI score.

2. OBJECTIVE AND SCOPE OF THE PLAN :

Vatva and Narol industrial clusters, Ahmedabad, Gujarat have been listed with score Air CEPI 60, Water CEPI 62 and Land CEPI 56 with ranking 27 in the report with overall CEPI as 74.77 Therefore a detailed Action Plan for the Vatva, Ahmedabad, Gujarat for prevention and control as well as remediation of various environmental components using the best available and appropriate engineering practices is a must. A comprehensive implementation mechanism including financial, manpower and technology is required to be synchronized in a time bound manner with an efficient monitoring mechanism which is necessary for bringing CEPI Score down the line.

3. METHODOLOGY :

This report on " Development of Comprehensive Environmental pollution Abatement Action Plan for Industrial Cluster – Vatva, Ahmedabad, Gujarat" is prepared based on the Terms of References (TOR) provided from the desk of CPCB Chairman vide D.O. letter no. B. 29012/ 1/ ESS/ 2010 dated May 18, 2010. GPCB has adopted methodology as mentioned in this letter. However due to time constraint, CPCB could not be involved during the survey, but it can be done during the course of review of action plan. Based on findings of the data collected, action points are drawn and comprehensive abatement plan is proposed in this report along with time frame, technological intervention, and infrastructure requirement after gap analysis. With this gap analysis and infrastructure requirement an attempt has been made for cost estimation, project model using PPP, financial outlay, and details of the scheme and present status of the project has been delineated in this report.

4. STAKE HOLDERS:

For the Vatva industrial cluster, following are the major identified stake holders;

1. Industries, their employees and Industrial Associations.
2. NGOs
3. Government bodies – GPCB, GIDC, AMC, AUDA, UDD, GCPC

GPCB is in continuous consultation with above stake holders through meetings and discussion.

Chapter-3

Vatva Industrial Cluster

1. BRIEF HISTORY OF THE CLUSTER :

The Vatva Industrial Estate was established by Gujarat Industrial Development Corporation in the year 1968. It is located at south east direction of Ahmedabad city at Longitude from 22^0 56'13" N to 22^0 58'31" N and Latitude from 72^0 37'11" E to 72^0 38'46" E, near Ahmedabad – Mehmadabad state highway, covering an area of around 13.5 sq.km. The Industrial Estate is divided in to four parts viz. Phase I to Phase IV. The GIDC currently falls under Municipal Corporation Limits.

2. ESTATE AT A GLANCE :

a) Number of industries – 682 (XGN dtd. 19/06/2010)
b) Type of industries

Category	Small	Medium	Large	Total
RED	560	14	13	587
ORANGE	64	1	1	66
GREEN	29	0	0	29
TOTAL	653	15	14	682

This categorization is as per CPCB guidelines.

c) Products manufactured - Pharmaceutical Products, Dyes, Dye-Intermediates, Pigments, Fine Chemicals, Other Organic Chemicals, Inorganic Chemicals, Textile Process Houses, Rolling Mills and other Non Chemical Process Industries
d) Water Source – GIDC Supply
e) Water Consumption – 24.5 MLD
f) Effluent Generation – 18.2 MLD
g) Hazardous Waste Generated
Recyclable - 126250 MT/year
Incinerable - 3815 MT/year
Landfillable - 217580 MT/year

A Map showing geographical location and Impact Zone is attached at Annexure – 8.

3. EMS PROVIDED BY THE INDUSTRIES

A. Water –

Individual units have provided ETP to achieve either the CETP inlet norms or the GPCB norms and then it is sent to CETP, Vatva for further treatment through pipeline and finally treated effluent from CETP is discharged into Mega pipeline ultimately to River Sabarmati. The details of ETP provided is as below:

Category	Small	Medium	Large	Total
RED	401	11	10	422
ORANGE	15	0	0	15
GREEN	5	0	0	5
TOTAL	421	11	10	442

B. Air –

Most of Individual units having air pollution potential have provided cyclone/multi cyclone separator/ water scrubber/Bag filter as APCM for flue gas emission. Chemicals industries have provided scrubbers for the process emission, if any. 199 Nos of industries switch over to clean fuel like CNG. The details of APCM are as below:

Category	Small	Medium	Large	Total
Red	331	7	6	344
Orange	21	0	1	22
Green	7	0	0	7
Total	359	7	7	373

C. Hazardous Waste –

Generated hazardous waste of individual industries are stored in hazardous waste storage facility within plant and disposed off to common TSDF site located at Vatva.

4. ENVIRONMENT TRACK RECORDS OF THE CLUSTER :

- Earlier Ahmedabad was ranked 4th in the year-2001 among polluting cities based on ambient air quality. EPCA constituted as per the Hon'ble Supreme Court order by the MoEF, GoI, under the chairmanship of Shri Bhurelal. Board had drawn an Air Action Plan for the Ahmedabad city. Through implementation of Air action plan, it has been possible to bring down SPM and RSPM in the Ahmedabad significantly. At present Ahmedabad is ranked at 66th in the year-2008 among polluting cities based on ambient air quality.

- However, recently CPCB has declared Vatva (Ahmedabad) as critically polluted area as per criteria CEPI.

5. PROBABLE POLLUTANTS :

A. Air – This industrial estate mainly comprises of dyes & dyes intermediate units, pharmaceutical bulk drugs & intermediate units and other chemical units. Hence major probable pollutants are PM, SO2, NOx, Cl2, HCl, Ammonia etc.

B. Water – Based on above nature of industries, major probable pollutants are BOD, COD, Color, TDS, Ammonical nitrogen, Phenolic compound etc.

6. MANAGEMENT OF WASTES :

A. MSW -Ahmedabad Municipal Corporation has developed solid waste land fill site as per the notification. Municipal waste generated in the area is managed by AMC.

B. BMW - There are 4 common bio medical waste incineration facility for Ahmedabad. There are about 7 health care units in the area and the BMW generated from them is managed and disposed off in the Common BMW Treatment and Disposal Facilities.

C. STP - The domestic waste water generated by the industrial units is either disposed off by septic tank / soak pit system or treated along with industrial effluent and disposed into CETP Vatva. AMC has provided five STP with total capacity of 670 MLD and are operational. Other two STP of total 310 MLD is under construction.

7. SURROUNDING ENVIRONMENT :

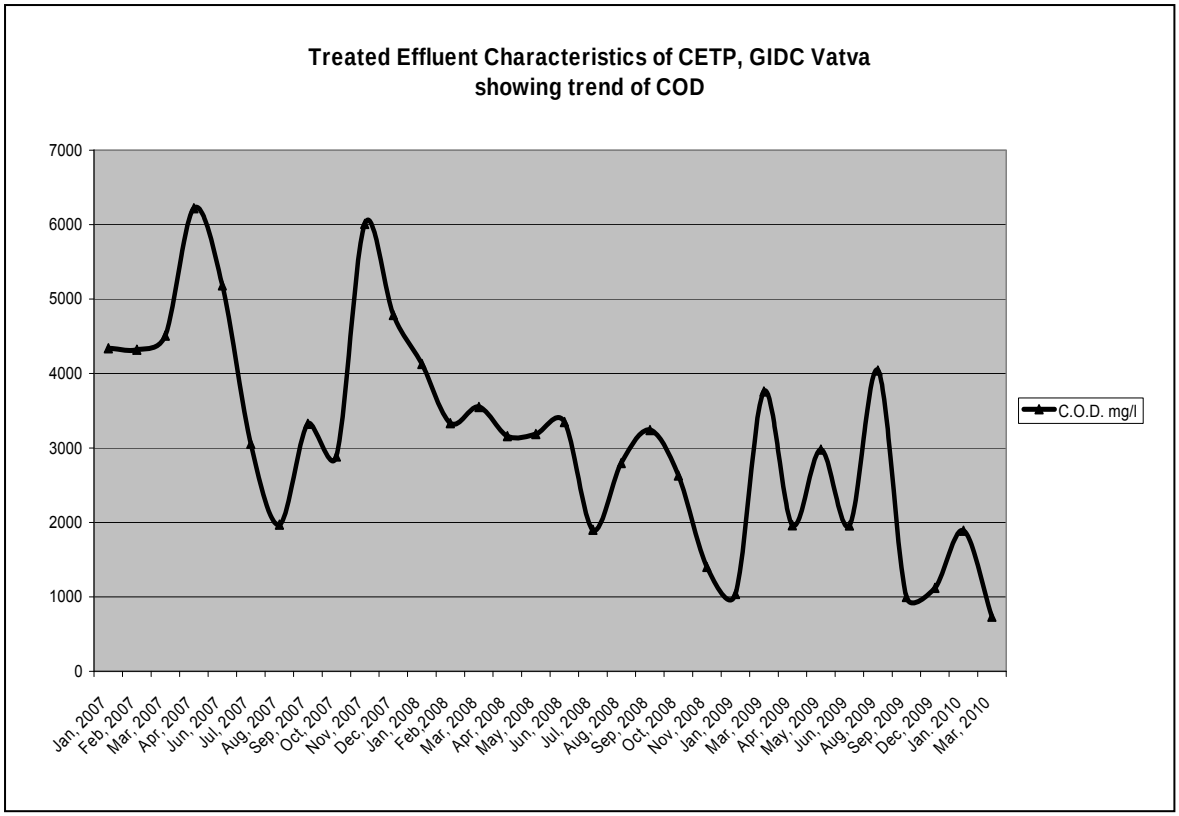
A. Population residing in GIDC Vatva
Permanent Population – 30,000 persons approx.
Workers engaged – 1.25 lakhs approx.

B. Flora & fauna – Being a planned industrial area there are no specific local flora and fauna in the area except planned plantation and gardens.

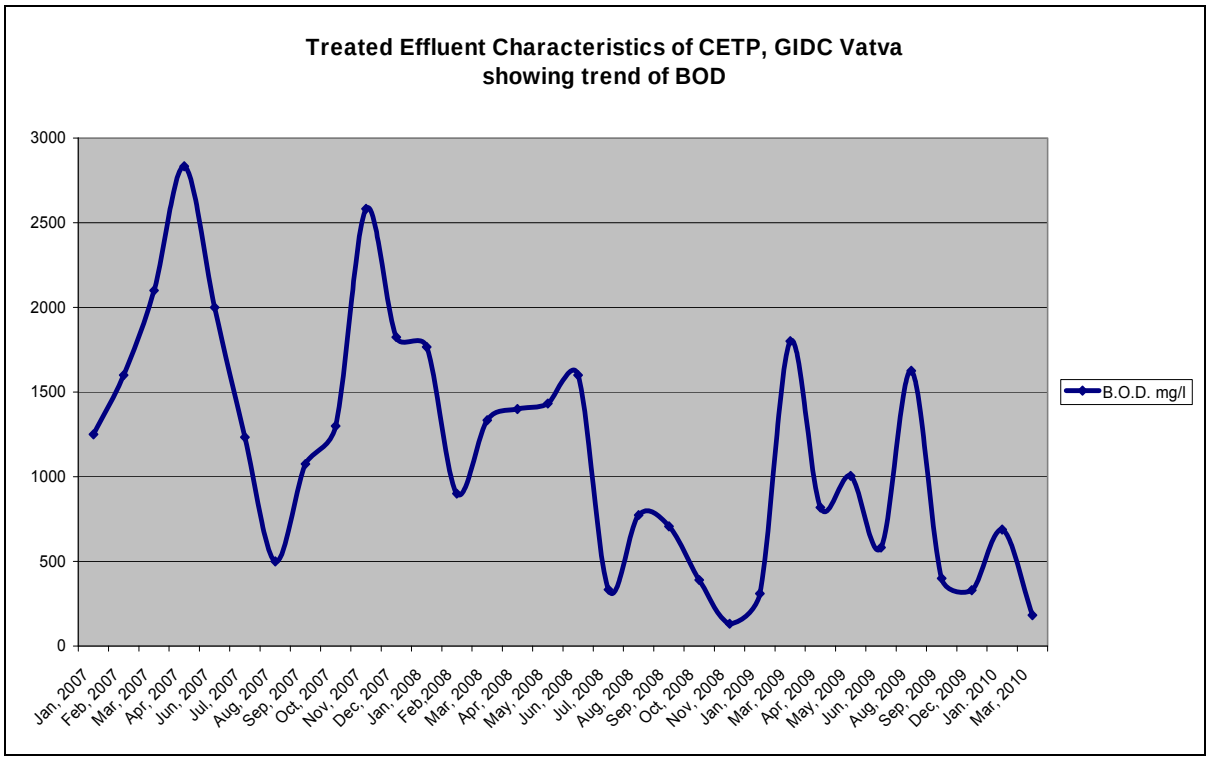
C. Eco geological features
- Khari cut canal passes through GIDC Vatva.
- 7 health care units small in nature.

8. ENVIRONMENTAL STATUS :

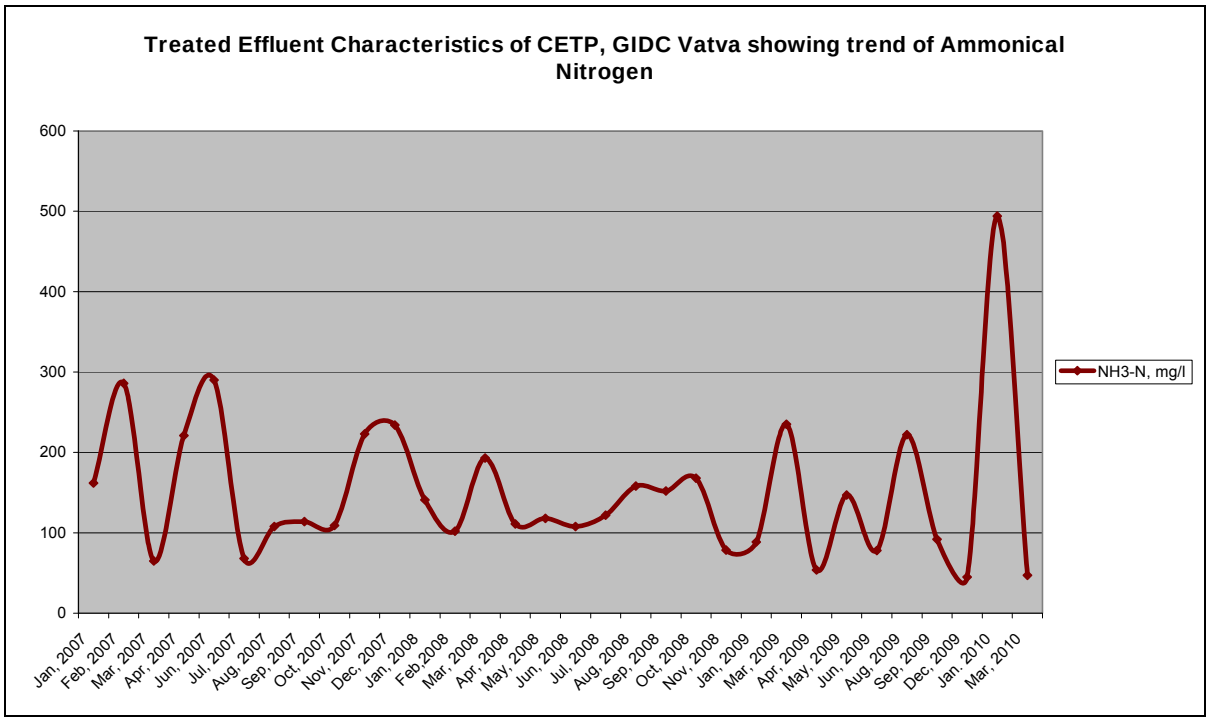
(A) Water: There is single outlet of the estate into the Mega pipeline through CETP. Board is regularly collecting the samples of treated waste water of CETP. The Analysis Report of the last 3 years is compiled and shown below in graphical representation, which indicates considerable improvements in quality of treated wastewater discharged. The results of the same are also attached as Annexure – I.



(Refer Annexure – I)

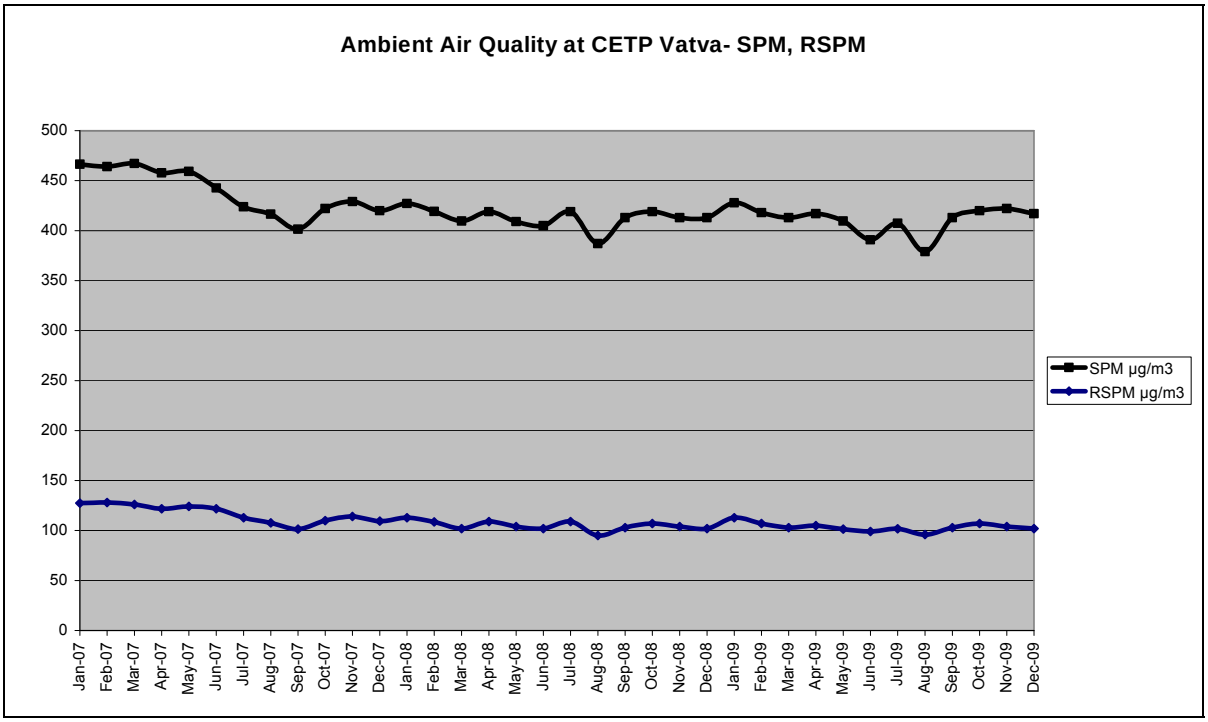


(Refer Annexure – I)

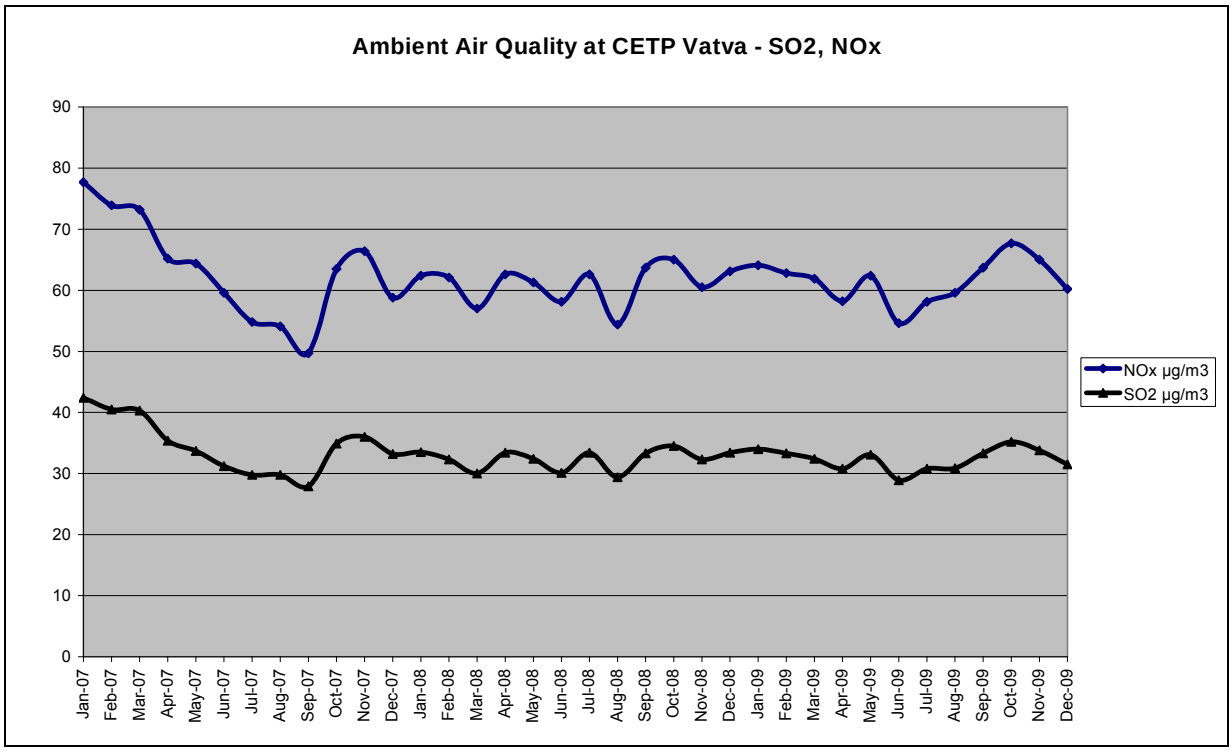


(Refer Annexure – I)

(B) <u>Air:</u> Board is regularly measuring the Ambient Air Quality of the industrial estate. The Analysis Report of the last 3 years is compiled and shown below in graphical representation, which indicates that there is considerable improvement in ambient air quality. Total 109957 Nos. of all kinds of vehicles in ahmedabad has been converted in to clean fuel like CNG/LPG. The results of the same are also attached as Annexure – II.



(Refer Annexure – II)



(Refer Annexure – II)

(C) **<u>Hazardous Waste</u>:** The industrial units of GIDC, Vatva are member of common TSDF and presently there is no illegal hazardous waste dumping.

(D) **<u>Ground Water</u>** : Ground Water Quality Monitoring is done regularly by GPCB and the Compiled Analysis Result is shown in Annexure – III .

9. <u>ENVIRONMENTAL ISSUES :</u>

Earlier till 1996, there was direct discharge of effluent by industrial units into Khari cut canal. After Hon'ble High Court Directives and subsequent vigilant actions by GPCB, presently there is no direct discharge of effluent into Khari cut canal. But due to illegal disposal of sewage, there is excess hydraulic load in the Industrial Effluent Conveying Pipeline i.e. Mega Pipeline. Therefore, there is occasional overflow at some places which finally reaches Khari cut canal. Hence presently polluted effluent is occasionally observed in Khari cut canal, which otherwise gets River Narmada water under River Interlinking Plan.

A. Water environment

There is occasional overflow of treated effluent at some manholes of Mega Pipeline in GIDC Vatva due to excess effluent discharge in Mega Pipeline. This is mainly due to illegal domestic sewage connections into Mega Pipeline and

excess effluent discharge by Industrial Units in Narol Area. The treated effluent from CETP, Vatva does not meet disposal norms. Work of separate AMC pipeline for residential domestic sewage conveyance is under progress.

B. Air environment

In view of recent notification of MoEF regarding amendment in Ambient Air Parameters, it is observed that the ambient air quality of this area is not meeting with the norms. There are problems of gaseous air emissions from the Industrial Estate at times when APCM are not operated efficiently. Directions and closers are also issued to such polluters.

C. Soil environment

Hazardous waste generated from the industrial units in GIDC, Vatva is disposed off to common TSDF site. No specific soil environment problem has been noticed.

D. Occupational Health:

As per the information available from the office of the Director of Industrial Safety & Health, Ahmedabad and office of the National Institute of Occupational Health (NIOH), Ahmedabad, they have stated that no incidence of death due to pollution or occupational disease or poisoning is recorded in their office.
Occupational health centers are provided by MAH units in this cluster to monitor health of the industrial workers. Primary health centers are provided in each industrial cluster.
GESCSL carries out activities for preservation of environmental resources and energy by creating awareness programs. It does social activities for public health also.

E. Identification of key indicators for action point:

- The major action points are basically decided on basis of waste water quality being discharged into River Sabarmati
- The air action plan is formulated based on EPCA format under the Supreme Court directives.

10. EXISTING ENVIRONMENTAL INFRASTRUCTURE

A. CETP –

CETP at GIDC, Vatva is managed by The Green Environment Co-operative Services Pvt. Ltd., GIDC Vatva.

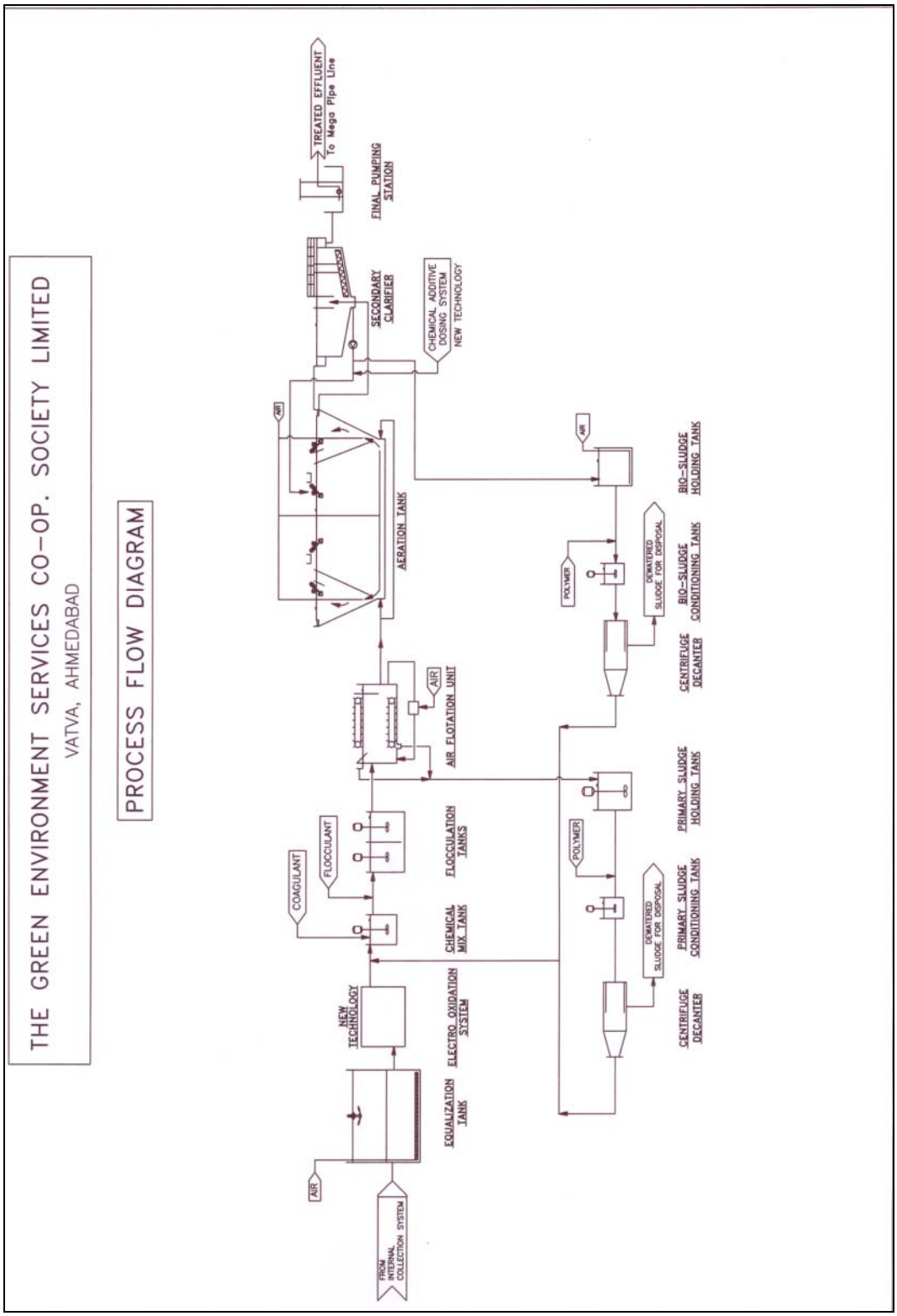
- **Design basis**

The CETP was designed to treat 16 MLD of effluent making use of new technology known as AIS (Advent Integral System) which consists of Aeration Basin surrounded by Integrated Peripheral Secondary Clarifier. Later during the up-gradation programme this Integral Clarifier was converted into Aeration Zone and two separate Secondary Clarifiers were provided. The aeration is accomplished with the help of medium bubble aeration grid supplemented by 18 nos. of Triton type aerators supplied by Aeration Industries International Inc., Minneapolis, USA.

The CETP inlet norms applicable to the member units in respect of the quality of the effluent are as under:

- BOD 1200 mg/l
- COD 3000 mg/l
- TSS 600 mg/l

The upper limits for the heavy metals and other pollutants have also been specified.
Process flow diagram is shown in Figure and CETP details are shown in a tabular form.


THE GREEN ENVIRONMENT SERVICES CO-OP. SOCIETY LIMITED
VATVA, AHMEDABAD
PROCESS FLOW DIAGRAM
TREATED EFFLUENT
To Mega Pipe Line
FINAL PUMPING STATION
SECONDARY CLARIFIER
CHEMICAL ADDITIVE DOSING SYSTEM
NEW TECHNOLOGY
AIR
AERATION TANK
AIR FLOTATION UNIT
COAGULANT
FLOCCULANT
FLOCCULATION TANKS
CHEMICAL MIX TANK
NEW TECHNOLOGY
ELECTRO OXIDATION SYSTEM
EQUALIZATION TANK
FROM INTERNAL COLLECTION SYSTEM
POLYMER
DEWATERED SLUDGE FOR DISPOSAL
CENTRIFUGE DECANTER
PRIMARY SLUDGE CONDITIONING TANK
PRIMARY SLUDGE HOLDING TANK
BIO-SLUDGE CONDITIONING TANK
BIO-SLUDGE HOLDING TANK

- **Details of CETP**

INDEX	NAME OF THE UNIT	VOLUME / CAPACITY
	Capacity of CETP	16 MLD
A	Member's Influent Holding Tank	24 Hrs. Holding Capacity
B	Sump Room B1: Butterfly Control Valve B2: pH Sensor B3: Magnetic Flow Meter	1.4 M X 1.4 M X 92 Nos.
C	Pumping Station C1: Magnetic Flow Meter C2: pH Sensor	6 Nos.
D	Emergency Collection Tank D1:Control Valves	820 M^3 8 Nos.
E	Neutralization Tank	398 M^3
F	Caustic Tank	40 M^3
G	Equalization Tank G1:Coarse Bubble Diffused Aeration Grid G2: Blower Room G3: Control Valve G4: Magnetic Flow Meter	16580 M^3 3 Air Blowers / Each 160 KW & 3000 M^3/Hr.
H_1	New Electro-oxidation System	800 M^3 / Hr
H_2	Flash Mixer	6 M^3
I	Flocculator	165 M^3
J	DAF Unit	590 M^3
K	Aeration Tank K1: Medium Bubble Diffused Aeration Grid K2: Blower Room K3: Triton make Jet Aerator with Air Blower K4: Chemical Additive Dosing System	27800 M^3 8 Air Blowers / Each 132 KW & 3400 M^3/Hr 12 Aerators / Each 45 KW with 7.5 KW Blower
L	Secondary Clarifier	2 Nos. X 1960 M^3
M	Final Pumping Station	275 M^3
N	Primary Sludge Holding Tank	50 M^3
O	Secondary Sludge Holding Tank	50 M^3
P	Sludge Conditioning Tank	150 M^3
Q	Centrifuge Decanter	2 Nos. / 20 M^3/Hr
R	Solid Waste Storage Facility at GESCSL	600 M^2

- **Performance and evaluation of performance of CETP**

  This Board is regularly carrying out monitoring of CETP and the graphical representation of the Analysis Reports is already shown earlier. As seen in the graphical representation there is improvement in performance.

- **Factors of Performance Improvement of CETP**

  1. Vigilant and rigorous monitoring by GPCB
  2. Member units have upgraded their individual ETP and operating them better
  3. Implementation of cleaner production
  4. In case of expansion of units and new units coming up, CETP inlet norms are made stringent instead of the current norms.
  5. Due to commissioning of waste exchange centre – Novel Spent Acid Management, load of concentrated effluent stream is decreased.
  6. Instead of isolation, filtration and tray drying process for dyes, spray drying was encouraged by GPCB and is adopted by the units and which has reduced load on CETP

- **Stage-wise modification / upgradation of CETP**

  In view of the constraints / limitations associated with the CETP hard ware as well as the process parameters.It was decided to implement up-gradation in the CETP to achieve the following objectives

  (a) To improve the biodegradation by being able to maintain MLVSS level at the desired value in the Aeration Tank.
  (b) To improve oxygen transfer efficiency by upgrading / augmenting the present aeration system.

  In order to achieve the above objectives aimed to improve biodegradation, the upgradation programme was divided in two phases. In Phase: I up-gradation programme the CETP was upgraded from the hardware point of view, while in Phase: II programme, new processes were incorporated with the existing biological treatment to enhance biodegradability of the organic pollutants and to achieve the specified outlet norms.
  The total investment in CETP including upgradation/modification done so far is Rs. 74.41 Crores approximately.

(B) <u>TSDF for solid waste disposal</u>:

TSDF is managed by The Green Environment Co-operative Services Pvt. Ltd., GIDC Vatva.

- **Design basis**

Secure landfill site for the safe disposal of solid waste was established in 1999. The hazardous and solid wastes generated by the industrial units in Vatva industrial estate mainly consist of Gypsum, Iron Sludge, ETP Sludge, Incinerator Ash, Reject / Off specification materials etc. Proper interim storage facilities are provided by individual industrial units in their premises for the storage of solid waste for a short period until it is picked up and transported to TSDF.

There are 4 Cells in the TSDF out of which 2 are filled. The total capacity created for the safe disposal of solid waste is 10.5 MT with an investment of Rs. 14.50 CRORE.

- **Monitoring data**

The TSDF is monitored regularly by GPCB. Monitoring wells have been provided at the TSDF. The leachate collected in the wells is sent to CETP, Vatva for treatment and disposal. See the Table for waste disposal of TSDF Vatva.

Year	Quantity Disposed in MT
2003	79115.06
2004	119029.8
2005	79632.8
2006	67352.5
2007	81963.3
2008	86885.5
2009	72138.0
Upto April 2010	28952.6

(C) Spent Acid Management

(Centralized Industrial Waste Exchange and By-product Recovery Facility)

Spent sulphuric acid is generated in the industrial units involved in the manufacture of dyes, dye intermediates and other chemicals where sulphuric acid or oleum are used as raw materials. The concentration of sulphuric acid in the spent acid is normally in the range of 10-30%. The individual industries find it difficult to store, handle or treat it effectively. It was therefore decided to establish this facility in the name of NOVEL SPENT ACID MANAGEMENT to carryout the following activities.

1. Segregation and collection of spent acid received at site in different tanks depending on the concentration of sulphuric acid and other properties.
2. The colorless and concentrated spent acid is directly supplied to the actual user to utilize it as a raw material in the process or as neutralizing agent in the treatment of wastewater.
3. Part of the spent acid is supplied to the manufacturers of ferrous Sulphate, alum, single super phosphate etc.
4. The relatively dilute and reasonably colorless spent acid is neutralized using hydrated lime for the production of Gypsum which will be supplied to the cement manufacturing plants.
5. The spent acid having color and other contaminants is neutralized with hydrated lime and the resulting sludge is disposed of into Secured Landfill Facility.

6. The wastewater generated as the filtrate is treated in the ETP consisting of primary and secondary treatment facilities and the effluent after treatment is sent to CETP of GESCSL for further treatment and joint disposal.

The facility is operational since March, 2010 and now successfully handling about 250 MT per day of spent acid. The total investment in this project is Rs. 30 Crores approximately.

(D) Mega pipeline for treated effluent:

Mega pipeline of 27 kms is provided for treated effluent of industrial cluster Vatva, Naroda, Odhav and Narol. Mega Pipeline from Naroda to Pirana has carrying capacity of 90 MLD.

Due to illegal connections of domestic waste pipelines of @ 2000 housing societies into mega pipeline and excessive discharge from units in Narol estate, mega pipeline overflow sometimes.

To disconnect domestic waste pipelines of housing societies from mega pipeline, AMC has laid 22 km (work of 20 km is completed) trunk line and by the end of Deceber,2010, when this work will be completed, these illegal connections will be separated and overloading on mega pipeline will be reduced.

(E) STPs by Ahmedabad Municipal Corporation:

Separate storm water collection and conveying system and separate Sewage Treatment Plants (STPs) are run by Ahmedabad Municipal Corporation as under:

No.	Capacity (MLD)	Location
1	106	Old Pirana STP near Behrampura
2	126	Old Vasna STP, Narol-Sarkhej Highway
3	182	New Pirana STP, Narol-Sarkhej Highway
4	76	New Vasna STP, Narol-Sarkhej Highway
5	70	East Zone AUDA STP at Vinzol
6	240	West Zone AUDA STP at Gyaspur
7	180	New Pirana STP Narol-Sarkhej Highway

11. ENVIRONMENTAL INFRASTRUCTURE NEED :

A. Effluent conveyance pipeline – For conveyance of effluent Mega Pipeline already exists to convey industrial effluent of Naroda, Odhav, Vatva and Narol Area.

B. There is a need for environmental infrastructure for domestic sewage that is presently being disposed off into Mega Pipeline this will reduce hydraulic load on Mega Pipeline and problem of overflowing of Mega Pipeline will be solved.

12. MONITORING PROTOCOL :

Currently GPCB carries out regular water quality monitoring under GEMS, MINAR and regular monitoring program and ambient air quality monitoring in the area under SAMP and NAMP. At present samples from 13 Nos of the surface water quality monitoring station are collected. 08 Nos of the ambient air quality monitoring station are operated and samples are collected regularly as per the CPCB protocol. All the CETPs & TSDF in the area are monitored and samples are collected regularly. Sample from the River Sabarmati at Miroli is regularly collected to know the water quality of the river after the outfall of the Mega pipeline. Industrial units located in the area are monitored under the Water Act, the Air Act and the E P Act as per the CPCB guidelines.

Additionally one continuous ambient air quality monitoring station has been made operational recently to monitor the ambient air quality.

13. DRAWING OF ACTION POINTS :

GPCB has conducted series of meetings with the stakeholders, NGOs and State Government agencies to have inputs from them for collection of required data. Based on field survey and monitoring data available with the GPCB, primary details are collected. These details include: Demarcation of geographical boundary, physical verification of pollution sources, environmental concern, demographical details, eco geological features, sensitive receptors and details on environmental infrastructure facility/ technology. Action plan based on this, suggests the various activities/concern, remedial actions, agency responsible along with the time frame for various environmental components. The points specifically highlighted are restriction of water consumption/ wastewater generation, upgradation of individual ETP, modification/upgradation of CETP, stringent CETP inlet and outlet norms, strengthening of APCM, use of cleaner fuel, control on fugitive emission, green belt development, proper hazardous waste management and cleaner production and cleaner technology for the reduction of the waste at source.

See Chapter – 6 for details of action plan.

Chapter-4

Narol Industrial Cluster

1. BRIEF HISTORY OF THE CLUSTER :

The Narol Industrial Cluster is spread over an area of about 500 hectares in Narol, Shahwadi, Isanpur and Piplaj areas in Ahmedabad district and fall under the Ahmedabad Municipal Corporation limits. River Sabarmati flows towards West while industrial area of Vatva is located towards East. Towards its North is the Ahmedabad city while to the South is the villages of Lambha and Jetalpur.

Narol Industrial Cluster is an agglomerate of 224 industries engaged in mainly dyeing and processing of textiles and dyes & chemicals. The members of Narol Industrial Cluster process about 2800 million meters of fabric every year and Dyes & chemicals. The total direct employment within these units is about 40,000, while indirect employment is estimated at 100,000 persons.

2. ESTATE AT A GLANCE

a) Total Nos. of industries: 224

Category	Small	Medium	Large	Total
RED	179	5	10	194
ORANGE	23	0	0	23
GREEN	6	1	0	7
TOTAL	208	06	10	224

This categorization is as per CPCB guideline

b) Type of industries: Dyeing and processing of textiles, other textile units and Dyes & Chemicals mainly.
c) Major Product manufacture: Engage in dyeing and processing of textiles, other textile units, Dyes & Chemicals etc.
d) Water source : Individual bore well
e) Water consumption: 100 MLD
f) Wastewater generation:75 MLD
g) Hazardous waste generation:

Recyclable	: 6740	MT/year
Incinerable	: 1275	MT/year
Landfillable	: 5375	MT/year

3. EMS PROVIDED BY THE INDUSTRY :

(A.) **Water**: Individual textile units have provided primary and secondary effluent treatment plant. Treated wastewater is discharged into Mega pipeline. CETP of 0.1 MLD is provided by Narol Dyestuff Association for small scale dyes & Chemical industries located in this cluster. The details of ETP provided are as below:

Category	Small	Medium	Large	Total
Red	76	3	6	85
Orange	8	0	0	8
Total	84	3	6	93

(B.) Air: Most of individual units having air pollution potential have provided cyclone, multi cyclone separator, water scrubber, Bag filter as APCM for flue gas emission. Chemical industries have provided scrubbers for the process emission, if any. 15 Nos of industries switch over to clean fuel like CNG. The details of APCM is as below

Category	Small	Medium	Large	Total
Red	89	1	7	97
Orange	4	0	0	4
Total	93	1	7	101

(C.) Hazardous waste: Generated hazardous waste of individual industries are stored in hazardous waste storage facility within plant and disposed off to common TSDF site located at Vatva.

4. ENVIRONMENT TRACK RECORDS OF CLUSTER :

- Earlier Ahmedabad was ranked 4th in the year-2001 among polluting cities based on ambient air quality. EPCA constituted as per the Supreme Court order by the MoEF, GoI, under the chairmanship of Shri Bhurelal. Board had drawn an Air Action Plan for the Ahmedabad city. Through implementation of Air action plan, it has been possible to bring down SPM and RSPM in the Ahmedabad significantly. At present Ahmedabad is ranked at 66th in the year-2008 for polluting cities based on ambient air quality. Thus air quality of ahmedabad is improved

- However, recently CPCB has declared Vatva as critically polluted area as per the Criteria of CEPI.

5. PROBABLE POLLUTANTS :

A. Water: This cluster mainly comprises of textile processing and dyes & chemical units. Hence major probable pollutants are BOD, COD, Color, TDS, Ammonical Nitrogen, Phenolic compound etc.

B. Air : This cluster mainly comprise of textile processing units and they are using coal/ lignite/ wood as fuel and some dyes & chemical units are having pollution potential of process

emission. Hence major probable pollutants are SPM, SO2, NOx., HCl, Cl2, Ammonia

6. MANAGEMENT OF WASTE :

A. Domestic waste water : Domestic wastewater of this cluster is discharge either into soak pit / septic tank or treated along with industrial wastewater and discharged into mega pipeline. AMC has provided five STP with total capacity of 670 MLD and are operational. Other two STP of total 310 MLD is under construction.

B. MSW : Ahmedabad Municipal Corporation has developed solid waste land fill site as per the notification. Municipal waste generated in the area is managed by AMC.

C. BMW : Healthcare units of this cluster have obtained the membership for the disposal of biomedical waste to common Bio medical disposal facility.

7. SURROUNDING ENVIRONMENT :

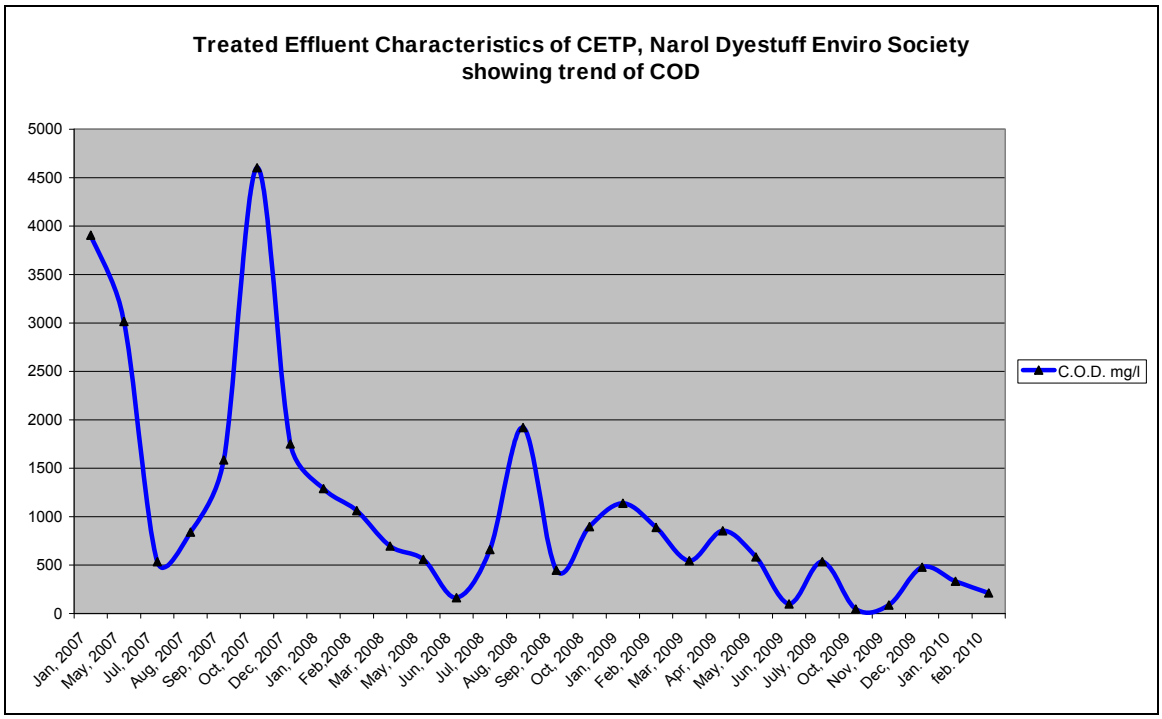
A. Population residing in the area: Narol cluster is situated in the Ahmadabad Municipal limits and surrounded by the residential area.

B. Flora & fauna: Being an industrial area there is no specific flora & fauna exist in the cluster.

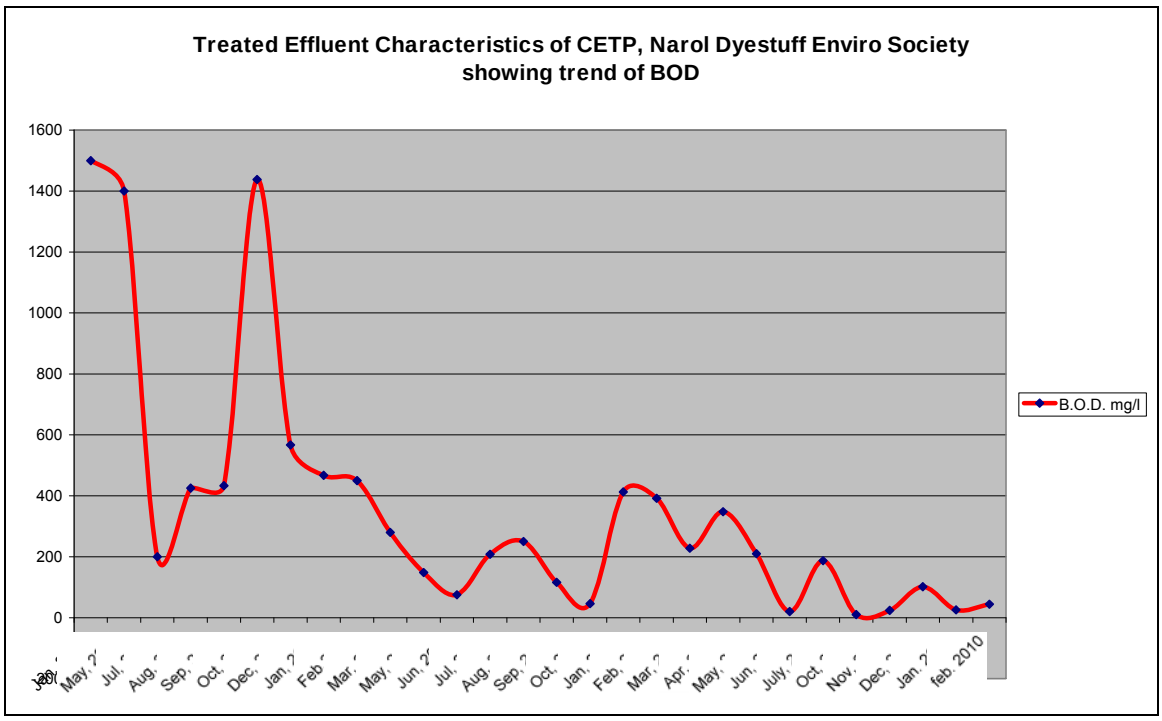
C. Ecological features: The area is scattered industrial area with residences and commercial establishments.

8. ENVIRONMENTAL STATUS :

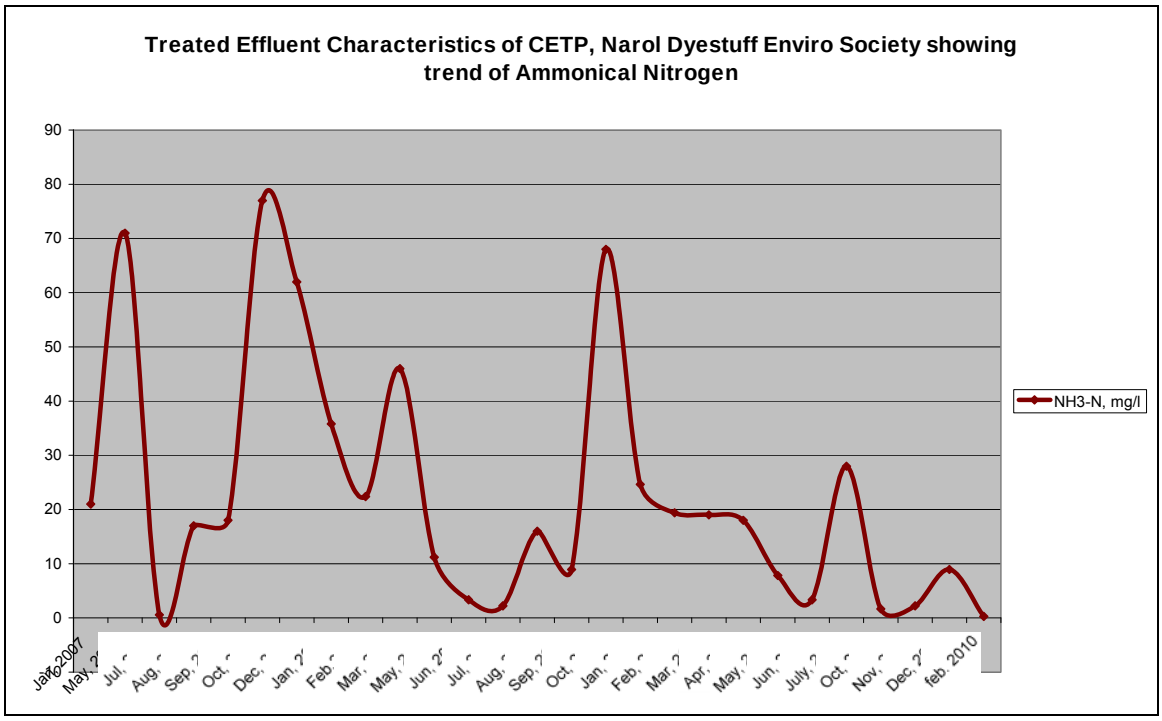
A. Water: There is single outlet of estate into mega pipeline through CETP. This Board is regularly monitoring and collecting the samples of CETP and Mega pipeline, which indicate that results of the CETP are by and large meeting with the norms. Mega pipeline outlet is not achieving the specified norms.



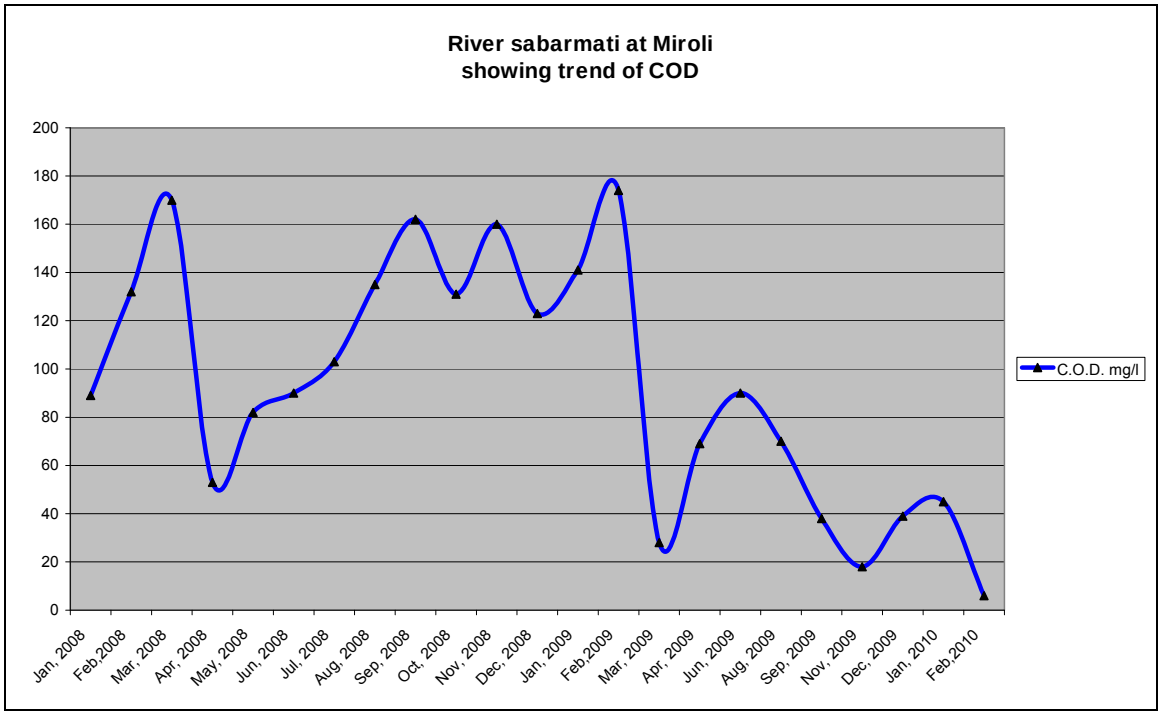
(Refer Annexure- IV)



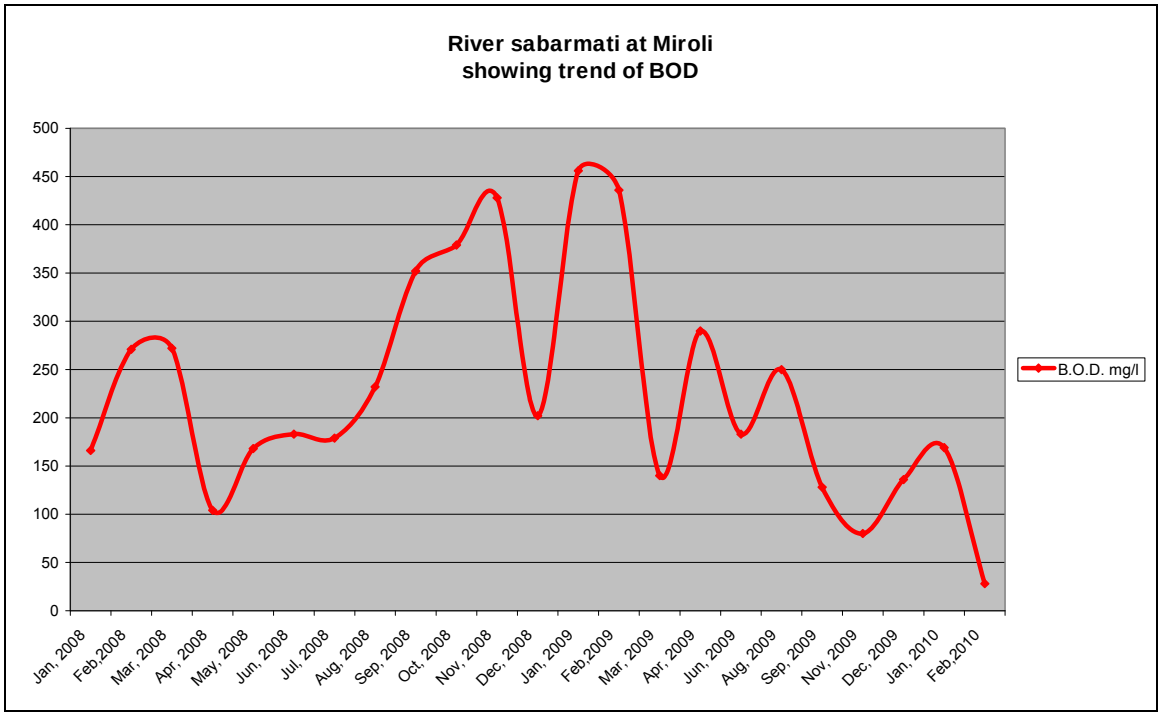
(Refer Annexure- IV)



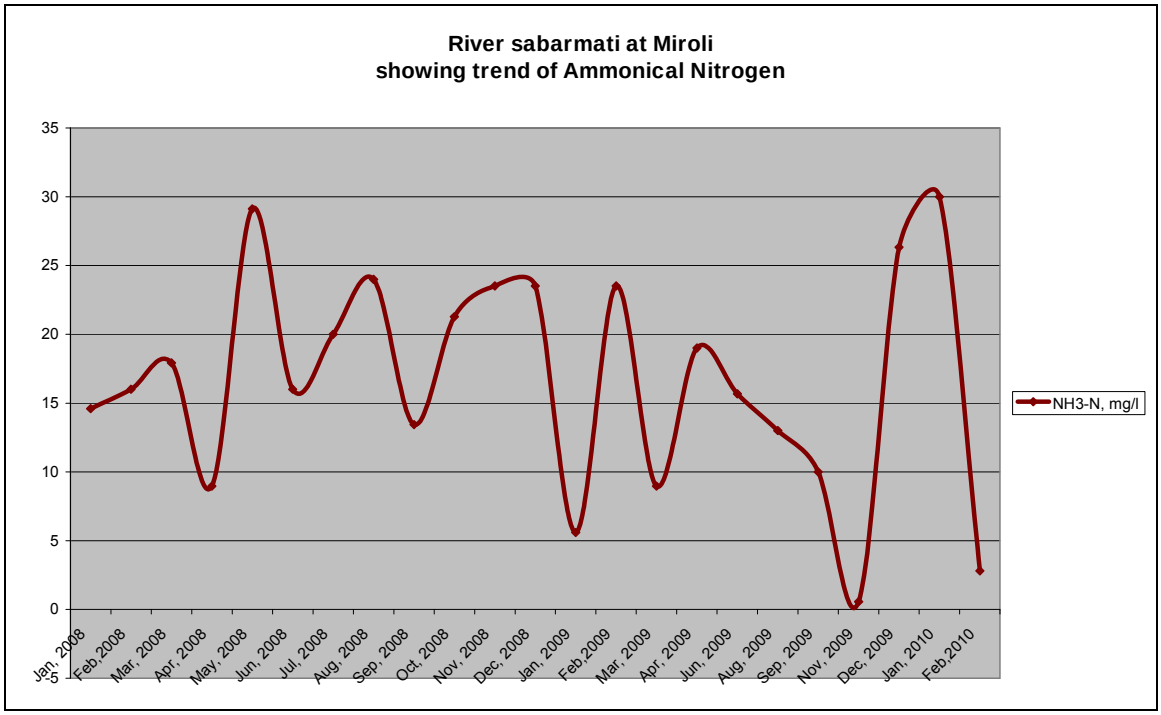
(Refer Annexure- IV)



(Refer Annexure- VI)

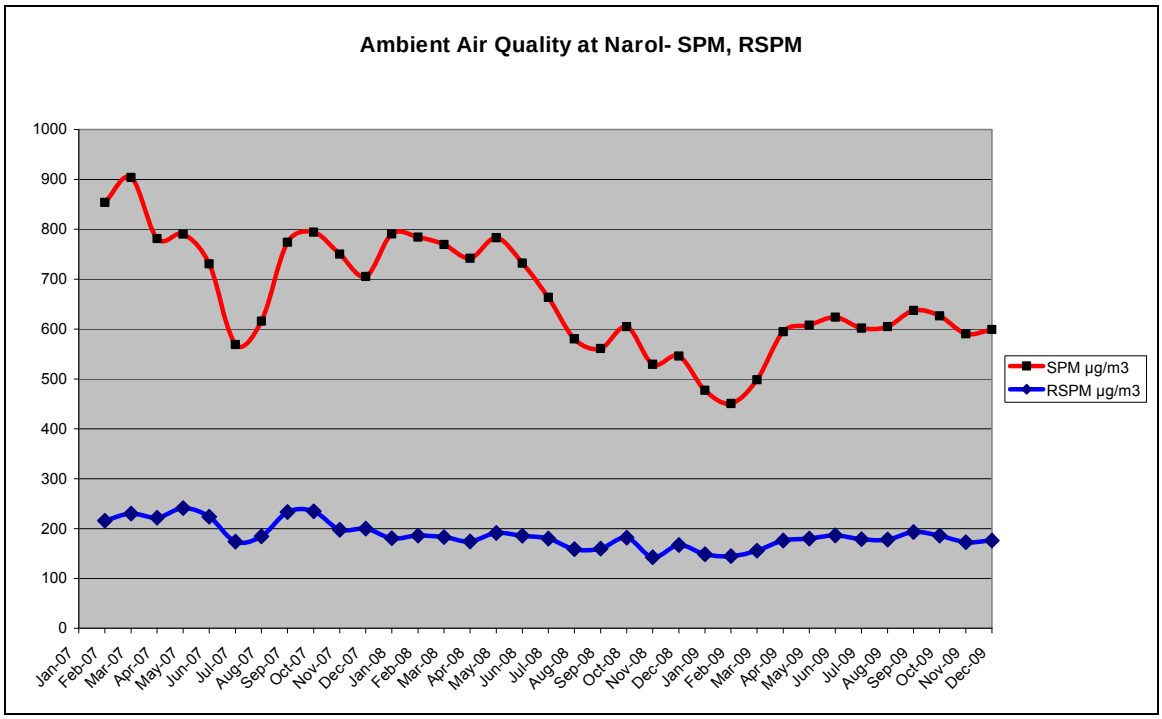


(Refer Annexure- VI)

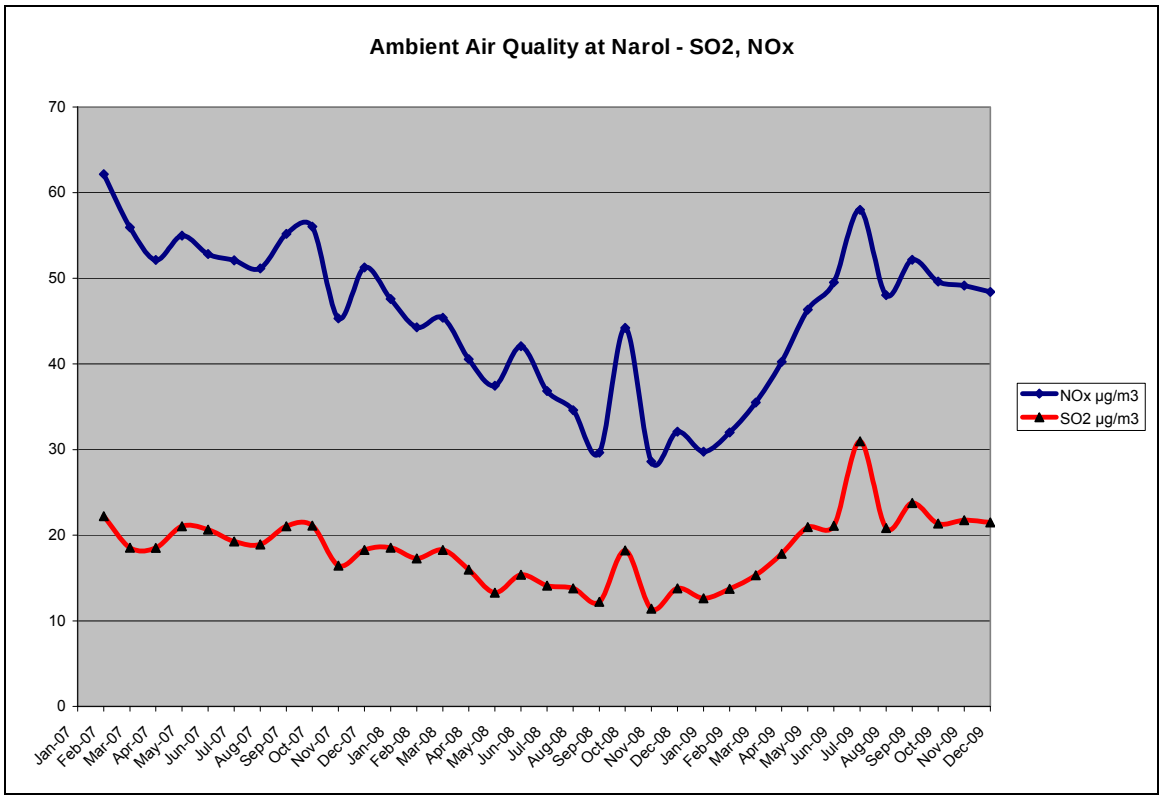


(Refer Annexure- VI)

B. Air: In view of recent notification of MoEF regarding amendment in Ambient Air parameters, it is observed that the ambient air quality of this area is not meeting with the norms. Total 109957 Nos. of all kinds of vehicles in Ahmedabad has been converted in to clean fuel like CNG/LPG.



(Refer Annexure- V)



(Refer Annexure- V)

C. Hazardous waste: All the industries of the cluster are members of the common TSDF facility, so, there is no issue related to illegal dumping of hazardous waste.

9. ENVIRONMENTAL ISSUES :

Earlier there was direct discharge of effluent by industrial units into Khari cut canal. There is no direct discharge of effluent into Khari cut canal after High Court directives and subsequent vigilant actions by GPCB. But due to illegal disposal of sewage, there is excess hydraulic load in the Industrial Effluent Conveying Pipeline – Mega Pipeline due to which there is overflow at several places which finally reaches Khari cut canal and hence presently polluted effluent is observed in Khari cut canal.

A. Water Environment: At present, the treated effluent from industrial units of this cluster is discharged into Mega Pipeline and mixed with treated sewage coming from Sewage Treatment Plant of AMC before final discharge into river Sabarmati.
The Mega pipeline has, since last few years, carrying excess of capacity and as a result, frequent overflows in upstream locations is being observed.

B. Air Environment: In view of recent notification of MoEF regarding amendment in Ambient Air parameters, it is observed that the ambient air quality of this area is not meeting with the norms.

C. Hazardous wastes: Hazardous waste generated from the Narol cluster is disposed off to common TSDF site. No specific soil environment problem has been noticed.

D. Occupational Health:

As per the information available from the office of the Director of Industrial Safety & Health, Ahmedabad and office of the National Institute of Occupational Health (NIOH), Ahmedabad, they have stated that no incidence of death due to pollution or occupational disease or poisoning is recorded in their office.
Occupational health centers are provided by MAH units in this cluster to monitor health of the industrial workers. Primary health centers are provided in each industrial cluster.

E. Identification of key indicators:

- The major action points are basically decided on the basis of waste water quality being discharged into River Sabarmati.
- The air action plan is formulated based on EPCA format which was decided by the Supreme Court directives.

10. EXISTING ENVIRONMENTAL INFRASTRUCTURE :

This cluster is having CETP of Narol Dyestuff Enviro society operated by the Narol dyestuff manufacturing association. The details of which is as below:

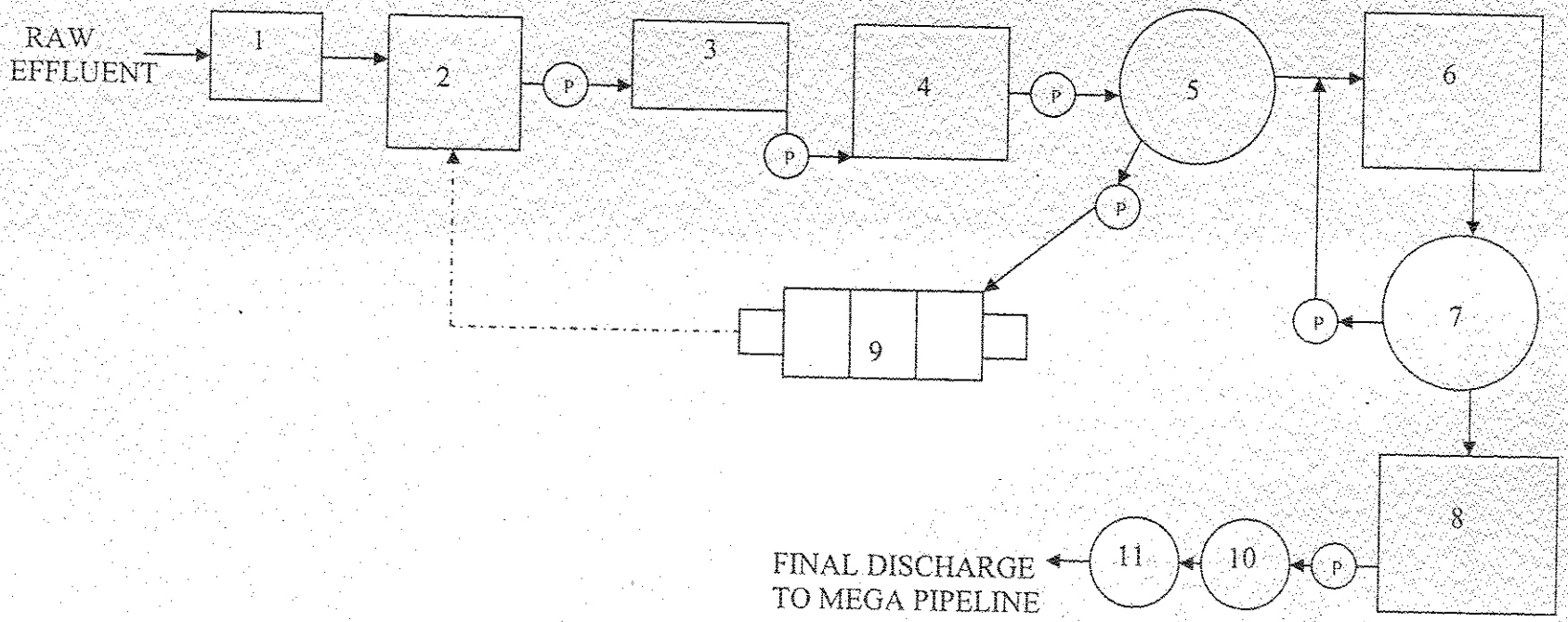
A. CETP of Narol Dyestuff Enviro society:

Design Basis: Capacity- 0.1 MLD (Member Units: 27)
Inlet Norms: COD: 2000 mg/l
BOD: 700 mg/l

Details of CETP:

Name of unit	Size	Capacity M^3
Capacity of CETP	0.1 MLD	
Measuring tank	1.55*1.55*2.14	5.14
Collection tank	3.91*1.65*5.19	33.48
Neutralisation tank	4.88*2.9*3.96	56.04
Primary clarifier	3.96Ø *3.35	41.23
Aeration tank	4.85*3.66*4.88	86.62
Secondary clarifier	4.78 Ø *3.58	64.21
Sand filter	1.20 Ø * 2.10	-
Carbon filter	1.20Ø * 2.70	-

FLOW DIAGRAM OF EFFLUENT TREATMENT PLANT



SR.	PARTICULARS	SR.	PARTICULARS	SR	PARTICULARS
1	Collection Chamber	2	Collection cum Equlisation Tank	3	Oil & Grease Trap
4	Neutralization Tank	5	Primary Clarifier	6	Aeration Tank
7	Secondary Clarifier	8	Treated Water Storage Tank	9	Sludge Drying Beds
10	Sand Filter	11	Carbon Filter		

Performance of CETP: This Board is regularly carrying out monitoring of CETP, which indicates that CETP is by and large meeting the specified norms.

Stagewise modification/up gradation plan: At present, CETP authority has not proposed any modification/ upgradation in the plant. However, they are in a process to improve the performance of CETP by optimizing the resources and better operation and maintenance.

B. TSDF for Solid waste disposal: All the units generating hazardous waste in this cluster has become the members of TSDF.

C. Mega pipeline for treated effluent:

Mega pipeline of 27 kms is provided for treated effluent of industrial cluster Vatva, Naroda, Odhav and Narol. Mega Pipeline from Naroda to Pirana has carrying capacity of 90 MLD.

Due to illegal connections of domestic waste pipelines of @ 2000 housing societies into mega pipeline and excessive discharge from units in Narol estate, mega pipeline overflow sometimes.

To disconnect domestic waste pipelines of housing societies from mega pipeline, AMC has laid 22 km (work of 20 km is completed) trunk line and by the end of Deceber,2010, when this work will be completed, these illegal connections will be separated and overloading on mega pipeline will be reduced.

D. STPs by Ahmedabad Municipal Corporation:

Separate storm water collection and conveying system and separate Sewage Treatment Plants (STPs) are run by Ahmedabad Municipal Corporation as under:

No.	Capacity (MLD)	Location
1	106	Old Pirana STP near Behrampura
2	126	Old Vasna STP, Narol-Sarkhej Highway
3	182	New Pirana STP, Narol-Sarkhej Highway
4	76	New Vasna STP, Narol-Sarkhej Highway
5	70	East Zone AUDA STP at Vinzol
6	240	West Zone AUDA STP at Gyaspur
7	180	New Pirana STP Narol-Sarkhej Highway

11. ENVIRONMENTAL INFRASTRUCTURE NEED:

A. The Mega Pipeline is, since last few years, carrying excess of capacity and as a result, frequent overflows in upstream locations are being observed.

B. To solve this problem, Ahmedabad Textile Processors Association has proposed to provide a separate effluent collection, conveyance, treatment and disposal system of 100 MLD dedicated for their member units located in this cluster.

12. MONITORING PROTOCOL :

Currently GPCB carries out regular water quality monitoring under GEMS, MINAR and regular monitoring program and ambient air quality monitoring in the area under SAMP and NAMP. At present samples from 13 Nos of the surface water quality monitoring stations are collected. 08 Nos of the ambient air quality monitoring station are operated and samples are collected regularly as per the CPCB protocol. All the CETPs & TSDF in the area are monitored and samples are collected regularly. Sample from the River Sabarmati at Miroli is regularly collected to know the water quality of the river after the outfall of the Mega pipeline. Industrial units located in the area are monitored under the Water Act, the Air Act and the E P Act as per the CPCB guidelines.

Additionally one continuous ambient air quality monitoring station has been made operational recently to monitor the ambient air quality.

13. DRAWING OF ACTION POINTS :

GPCB has conducted series of meetings with the stakeholders, NGOs, State Government agencies to have inputs from them for collection of required data. Based on field survey and monitoring data available with the GPCB primary details are collected. These details include: Demarcation of geographical boundary, physical verification of pollution sources, environmental concern, demographical details, eco geological features, sensitive receptors and details on environmental infrastructure facility/ technology. Based on this, an action plan suggests the various activities/concern, remedial actions, agency responsible along with the time frame of various environmental components. The points specifically highlighted are: restriction of water consumption/ wastewater generation, upgradation of individual ETP, modification/upgradation of CETP, stringent CETP inlet and outlet norms, strengthening of APCM, use of cleaner fuel, control on fugitive emission, green belt development, proper hazardous waste management and cleaner production and cleaner technology for the reduction of the waste at source.

See Chapter – 6 for details of Action Plan.

Chapter-5
New Initiatives

RECENT INITIATIVES GPCB FOR POLLUTION CONTROL IN AHMEDABAD AREA:

1. We have reconstituted Technical Committee of Board Members and outside experts to discuss and decide upon the cases of the change of product mix and some typical applications from critically polluted areas.

2. To increase vigorous monitoring, vigilance teams and separate Regional Office are formed under the leadership of Senior Environmental Engineer for Ahmedabad area.

3. For problem of overflow of Mega Pipeline due to excess flow from Narol Industrial Area, separate additional pipeline infrastructure is being laid and new CETP of 100 MLD is being setup by Ahmedabad Textile Processors Association in Narol Industrial Area to resolve the issue.

4. Novel Spent Acid Management - centralized industrial waste exchange and by product recovery facilities is operational since March-2010 and handling about 250 MT of spent acid per day.

5. All the Industrial Units obtaining EC from SEIAA have been imposed stringent norms.

6. Khari cut canal cleaning work is completed. Partial lining work of the Canal has also been completed. Initially the Canal was not approachable but the same has been improved and now it is clean and approachable. Beautification work of the Canal and adjacent areas is being taken up by AMC in time bound manner.

7. Irrigation Department has started supplying Narmada Canal Water to Khari cut canal under River Interlinking Plan.

8. The Industrial Units in the Area have carried out activities under Cleaner Production Initiatives.

9. The GreenEnvironment Services Co-op society Ltd, Vatva has been selected for “Special Commendation” for the ‘Golden Peacock Environment Management Award for the Year 2010’.

10. Center of excellence and Eye hospital with laboratory are started in 2010.

For State level infrastructural expansion and recent initiatives, please see Chapter – 1 of Introduction.

Chapter-6
Action Plan

ACTION PLAN FOR VATVA

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
WATER						
1	Magnetic flow meter and flow recorder at final outlet of ETP & CETP.	To control overflowing of mega pipeline, it is necessary to control the discharge of excessive quantity of w/w from the industrial units (i.e. the w/w discharge should be as per CCA condition). To check the quantity of w/w being discharged it is proposed that in the 1st phase the units having effluent quantity > **25** m3/day	Identification of units having effluent quantity > **25** KLD.	GPCB, Concerned industries, CETP, VIA, ATPA	Already identified & verification by 15.07.2010	To be borne by the concerned industry. Association may assist individual units
			Industrial Association will issue the circular to their members to provide the Magnetic flow meter. GPCB will also issue notice to such units.	Concerned industries, CETP, VIA GPCB, ATPA	31.7.2010 (short Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
		and all CETPs should provide Magnetic Flow Meter at the final outlet. Flow recorder is necessary to know the cumulative flow during any period.	Magnetic flow meter required to install at final outlet of ETP by large scale units (effluent quantity >= **25** KLD) and CETP. **Installation of flow meters at the outlet of all ETPs connected to CETP.**	Concerned industries, CETP	31.10.2010 (short Term)	
2	Water consumption from non permitted sources (eg. Borewell, tanker etc.) or more than permitted quantity	It is observed that many industrial units have no proper control over water consumption which not only increase the overall w/w generation but also tends to w/w disposal mismanagement. There-fore, it is necessary to direct unit to restrict water	Identification of source of water i.e. tanker, bore well etc. for its authenticity.	Concerned industries, VIA, GIDC , GPCB, ATPA	31.8.2010 (short Term)	-
			Issue direction to stop the unauthorized use of water by the industries.	Concerned industries, VIA, GIDC, GPCB, ATPA	31.10.2010 (short Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
		consumption as per the quantity mentioned in CCA application and to also to direct GIDC to seal the non permitted bore wells.	Direction to seal the non permitted bore well, tankers	GIDC/ Concern agency	31.12.2010 (short Term)	
3	Sealing of unauthorized discharge other than regular discharge of effluent.	All industrial units shall be directed to operate only one outlet through flow meter for effluent disposal so that unauthorized discharge can be checked. The Concerned authority shall disconnect / seal such unauthorized discharge.	Concern authority will be asked to identify unauthorized outlet.	Concerned industries, VIA, GIDC, GPCB, ATPA, CETP	Ongoing process and will be made more vigorous	Expenses, if any, to be borne by the unit having unauthorized outlet.
			All industrial units will be asked to submit notarized undertaking to GPCB with a copy to respective association stating that there is no unauthorized outlet.	Concerned industries	31.8.2010 (short Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
4	zero discharge unit – not to have drainage connection or any outside discharge.	GIDC/ AMC shall be asked to disconnect the drainage connection (if any) to the industrial units which are issued CCA with zero discharge condition. Careful monitoring shall be carried out to avoid any illegal discharge.	Inventorisation of the units having consent under Water Act for zero discharge.	VIA, GPCB, CETP	31.7.2010 (short Term)	Expense to be borne by the defaulter unit.
			Review the condition specifically for multi products/ H- acid, VS manufacturing units.	GPCB	31.12.2010 (short Term)	
			Drainage connection to be disconnected of zero discharge units and certified by GIDC/AMC and checked by GPCB.	Concerned industries, VIA, GIDC, GPCB.	31.12.2010 (short Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
			All zero discharge units will be asked to submit notarized undertaking to GPCB with a copy to respective association stating that there is no unauthorized outlet and observing zero discharge.	Concerned industries	30.9.2010 (short Term)	
5	Identification of unauthorized connection to GIDC drainage line OR Mega pipeline	Intensive monitoring shall be carried out of the units, which are located on the bank / adjacent to mega pipeline / Khari cut canal	Unauthorized connection in drainage line to be checked and disconnected by competent authority and verified by GPCB.	AMC, GIDC, VIA, GPCB, ATPA	Ongoing process	Expense to be borne by the defaulter unit.

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
6	Identification of non-biodegradable effluent	For better treatability at ETP/ CETP, units having non-biodegradable effluent shall be identified and shall be directed to segregate the said stream, and to install appropriate and effective treatment units like multiple effect evaporator, RO system, incinerator etc	Identification of the streams having Non-biodegradable effluent containing refractory COD, toxicants like Ammonical Nitrogen where treatability not possible.	Concerned industries, VIA, CETP, GPCB	31.8.2010 (short Term)	Common incinerator may be installed for non-biodegradable effluent on or before 30-10-2010. Cost may be worked out by respective Association on PPP mode.
			The units manufacturing pesticides, dyes intermediates, bulk drugs etc. will be asked to study their present treatability of effluent and accordingly segregate non-biodegradable streams.	Concerned industries	31.12.2010 (short Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
			A time bound action plan required to be submitted to install multiple effect evaporator/RO system/ Incinerator System/ New technology including cleaner production and cleaner technology by concerned industries.	Concerned industries	30.11.2010 (short Term)	
			Commissioning of above proposal	Concerned industries	31.03..2011 (Long Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
7	Reduction of pollution load on CETP and upgradation of CETP	It is observed that CETP inlet and outlet norms are not meeting with the prescribed norms.	Based on the data available, review the present inlet norms of the CETP for the units generating effluent more than 25 KLD. Stringent the inlet norms of the same.	GPCB	31.7.2010 (short Term)	PPP mode
		The performance evaluation of CETP indicates quality of effluent discharge is not as per the specified norms, which clearly indicates the CETP requires up gradation/modification	CETP authority shall study their treatability of effluent from prominent agency.	CETP authority	30.9.2010 (short Term)	
			Based on the recommendation of agency, CETP authority shall upgrade CETP.	CETP authority	31.03.2011 (Long Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
8	Checking of illegal discharge of Acidic/ highly polluted effluent	Units manufacturing dye-intermediates are generating spent acid of low concentration which is required to manage properly. Necessary directions shall be issued to the spent acid generating as well as acid using industrial units to become member of NOVEL for proper management of spent acid	Movement of spent acid shall be regularized by single point purchase system. Acidic/ highly polluted effluent which is discharged illegally to be checked by GPCB as well as Industrial Association on routine basis	NOVEL, VIA GPCB, CETP	Ongoing process	-
9	To stop tray drying and salting process	Generation of high TDS stream wastewater, which disturb the functioning of the CETP.	Identification of the unit having tray drying and salting process	Concerned industrial units, GPCB	30.9.2010 (short Term)	-
			Setting up of common spray drying facility or identification of spare capacity with existing spray dryer	CETP, VIA	31.3.2011 (Long Term)	

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
			Complete phase out of tray drying and salting process	Concerned industries	30.6.2011 (long Term)	
10	Upgradation of drainage system	CETP receives partially treated w/w through drainage. Hence frequent problems of drainage chocking are observed resulting into overflow of manholes/ seepage etc. Concerned agency for the drainage shall be directed for proper maintenance	Foolproof mechanism for regular monitoring, cleaning and maintenance is required by concerned authority. **The scheme for upgradation of drainage system to remove the problem of choking of drains should be prepared by 31st December, 2010 and adequate measures suggested in scheme should be implemented.**	VIA, GIDC, AMC, ATPA		Scheme in this regard may be prepared by the concerned authority for financial help under the government policy, if any.

Sr No	Activity	Issue	Action	Implementing Agency	Time limit	Financial implication & outlay
11	To study impact on health within and surrounding population	Probable health risk within and vicinity of 2 kms from the cluster.	To carryout health impact assessment study w r to Blood Test, Lung Function, Cell Rupture With Sputum Test, Blood Pressure Test	Concern industrial Association through NIOH/DISH	31.12.2010 (short Term)	PPP Mode
12	Need of new 100 MLD CETP along with separate pipeline infrastructure.	Narol area mainly comprises of textile processing units having their own treatment facilities and discharging 70 MLD of treated effluent against sanctioned 30 MLD of discharge resulted into to overflow of mega pipeline. It is required to provide a new CETP with proper collection, treatment and conveyance system.	Identification of Land	Ahmedabad Textile Processors Association	30.09.2010 (short Term)	
			Construction and commissioning of new 100 MLD CETP for textile units with new pipeline network infrastructure.	Ahmedabad Textile Processors Association	31.12.2011 (Long Term)	PPP Mode

AIR						
1	Strengthening of air pollution control measures	Air Action Plan for Ahmedabad City is under implementation. The industrial units shall be directed to upgrade APCM to meet the amended Ambient Air Quality Norms, if required.	Industrial units consuming solid fuel like coal, agro waste, etc. required to upgrade air pollution control system by installing bag filters so that ambient air in the nearby area meet with the revised norms of PM2.5.	Concerned industries, GPCB	30.09.2010 (short Term)	To be borne by the concerned industry. Association may assist individual units
			Air pollution control system attached to process is required to be checked for adequacy and if needed upgrade the same by adopting efficient absorbing media.	Concerned industries, GPCB	30.09.2010 (short Term)	

			Total 102 Bag filters & 6 ESPs had been installed by the industries as APCM. Modification & upgradation of installed Bag filters and ESP.	Prominent agency	31.12.2010 (short Term)	Industries concerned

2	Adoption of cleaner fuel	Gas infrastructure agency has created an infrastructure for industrial gas supply. The industrial units shall be asked to convert their Boiler for gas usage.	Industrial units using solid fuel shall be required to adopt cleaner fuel wherever it is feasible considering availability of gas and economics. However, there are constraints like assured supply, adequate supply, high prices and competition in market etc. **Usage of gas in industries should be ensured based on the techno-economic feasibility study which should be completed before 31st December, 2010 and use of gas in industry should be ensured within one year**	Concerned industries, Gas company, GPCB	Reasonable	

3	Plantation in the industrial estate	Concerned authority shall be asked to provide adequate green belt in the periphery as well as wherever possible within the estate.	Considering the present plantation as baseline datum, five years plan for plantation of industrial estate to be submitted by the GIDC/ Association in consultation with Forest department.	VIA, GIDC, Forest Dept.	Ongoing process	
4	Restriction on using un authorized fuel.	Use of unauthorized fuel like petcock, shall be stopped. The industrial units shall be directed to use the fuel as per the consented condition	Industrial units shall use authorized fuel as consented and shall not use any unauthorized fuel.	Concerned industries, GPCB	31.12.2010 (short Term)	

5	Control of fugitive emissions	It is observed that fuel handling, chemical storage and processes including pickling are the major source of fugitive emission. Hence the industrial units shall be directed to adopt good housekeeping practices.	Good practices like cleaner production and cleaner technology to be adopted in fuel handling, process control in closed system and house keeping.	Concerned industries, **GPCB.**	30.09.2010 (short Term)	Concerned industry
6	Ambient Air Quality Monitoring	Concerned agency shall be asked to operate the existing AAQMS regularly and also to increase the no of stations	Existing AAQMS to be strengthened to monitor AAQ as per new notification and monitoring of POP, HAPs. New AAQMS shall be installed. Installation of continuous ambient air monitoring station.	GPCB VIA	31.12.2010 (short Term)	

iii	**Hazardous Waste**					
1	Checking of illegal transportation and dumping of Hazardous waste	TSDF operators/Industries Association shall be asked to keep vigil on their member units regarding timely and regular disposal of HAZ wastes	Vigil check required to be kept on illegal transportation and dumping of hazardous waste.	Individual industries, CETP, VIA, NGO, GPCB	On going process	
2	CPCB guidelines for TSDF are to be strictly followed	TSDF guidelines for waste quantity at site, sheds for different wastes, fire fighting facility working of incineration, etc. are not properly observed.	TSDF operator will comply with these requirements.	Concerned TSDF	31.08.2010 (short Term)	Concerned TSDF
			No dumping of incinerable waste in TSDF	Concerned TSDF	31.08.2010 (short Term)	
			Grouping & grading of different type of waste at TSDF.	Concerned TSDF	31.08.2010 (short Term)	
3	Adoption of 4-Rs (Reduce, Recover, Reuse, Recycle)	It is required to adopt 4-Rs for better management of Hazardous waste and co-incineration of incinerable hazardous waste in cement kiln.	Inventorisation of the various solid/ Hazardous waste generated from the industries	GPCB, Concern industries, VIA, Gujarat Cleaner Productivity Council	31.12.2010 (short Term)	Concerned unit and recycler unit.

			Creation of waste exchange center inline with Novel Spent Acid System	Concern industries, VIA	30.6.2011 (Long Term)	
4	Capacity Upgradation of Existing TSDF	It is observed that TSDF is about to reach their design capacity. therefore, it is required to expand their design capacity	TSDF authority may be asked to work out for the remaining life of existing TSDF and identification of new site / new cell in existing facility as per requirement.	Concerned TSDF	31.12.2010 (short Term)	TSDF authority may approach the Ministry of Industry for Upgradation of TSDF under various schemes

Chapter-7

Effect on CEPI

Expected CEPI score based on Action plan framed by GPCB

Sub component	Basis for subcomponent rating	Max	CEPI as published in CPCB document of Dec-2009			Expected reduction in CEPI based on GPCB action plan			Justification for expected reduction		
			Air	water	Land	Air	water	Land	Air	Water	Land
A1	Based on the data on the presence of toxins	**6**	3	3	3	3	3	3	-	-	-
A2	Based on the scale of industrial activities	**5**	5	5	5	5	5	5	-	-	-
A	A1*A2	**30**	15	15	15	15	15	15			
B1	Based on the pollutant concentration data(Ambient Pollutant Concentration)	**8**	4	8	3	4	8	3	-	-	-
B2	Based on the impact on people (Evidence* of adverse impact on people)	**6**	3	4.5	0	3	3	0		**After compliance of norms for water pollution there will be decrease in impact on people and hence there will be reduction**	

B3	Based on the impact oneco-geological features(reliable evidence of adverse impact on eco-geological features)	**6**	3	4.5	3	3	3	0		**Reduction in B3 for water pollution because there will be little impact on eco-geological features due to water pollution**	**Reduction in B3 because there will be no impact on eco-geological features after total compliance for hazardous waste management**
B	B1+B2+B3	**20**	10	17	6	10	14	3			
C1	Based on potentially affected population)	**5**	5	5	5	5	5	1	-	-	**Reduction in C1 because after compliance of hazardous waste management there will be no impact of hazardous waste on people.**
C2	(Based on the level of exposure)	**5**	4	2	3	4	2	1	-	-	**After management of hazardous waste the level of exposure will decrease and hence decrease in C2**
C3	Based on the risk to sensitive receptors	**5**	5	5	5	5	5	5	-	-	
C	(C1*C2) + C3	**30**	25	15	20	25	15	6			

D	Based on the informationon pollutioncontrol facilities	**20**	10	15	15	5	10	5	**There will be reduction in D because after enforcing the norms for common facilties it is envisaged that they will adequate and will be complying.**	**There will be reduction in D because after enforcing the norms for common facilities' it is envisaged that they will adequate and will be complying.**	**There will be reduction in D because after enforcing the norms for common facilties it is envisaged that they will adequate and will be complying.**
CEPI	A+B+C+D	**100**	60	62	56	55	54	29	**-**		
	max.CEPI		62			55					
	Aggregated CEPI		74.77			62.18			**Thus after implementation of this Action Plan for short term period the CEPI score is predicted as 62.18 which will further decrease on implementing the long term action plan**	-	-

nnexure - I

Treated w/w Quality at CETP, Vatva

	NH3-N,	B.O.D.	C.O.D.
Permissible Limit	**50 mg/l**	**30 mg/l**	**250 mg/l**
Jan, 2007	162	1250	4340
Feb, 2007	286	1600	4318
Mar, 2007	65	2100	4509
Apr, 2007	221	2833	6220
Jun, 2007	290	2000	5185
Jul, 2007	68	1233	3056
Aug, 2007	108	500	1971
Sep, 2007	114	1075	3325
Oct, 2007	109	1300	2886
Nov, 2007	223	2583	6008
Dec, 2007	234	1825	4786
Jan, 2008	141	1767	4128
Feb,2008	102	900	3333
Mar, 2008	193	1334	3551
Apr, 2008	111	1400	3160
May, 2008	118	1433	3188
Jun, 2008	108	1600	3347
Jul, 2008	122	333	1901
Aug, 2008	158	773	2800
Sep, 2008	152	707	3240
Oct, 2008	168	390	2630
Nov, 2008	78.4	132	1403
Jan, 2009	88.5	310	1040
Mar, 2009	235	1800	3760
Apr, 2009	53.8	818	1962
May, 2009	147	1005	2978
Jun, 2009	78	582	1959
Aug, 2009	222	1625	4040
Sep, 2009	92	400	1000
Dec, 2009	44.8	329	1120
Jan. 2010	494	688	1888
Mar, 2010	47	182	736
April,2010	7.84	359	1375
July,2010	43.68	221	680
Aug, 2010	62	177	544
Sept, 2010	53	257	1010

Annexure – II

Ambient Air Quality at CETP Vatva

	RSPM	**SPM**	**SO_2**	**NOx**
Permissible Limit	**100 µg/m³**	**200 Mg/m³**	**80 µg/m³**	**80 µg/m³**
Jan-07	127.4	339	42.4	35.3
Feb-07	128	336	40.5	33.4
Mar-07	126.1	341	40.3	32.9
Apr-07	121.9	336	35.4	29.8
May-07	124.2	334.9	33.7	30.7
Jun-07	121.8	320.8	31.2	28.4
Jul-07	112.9	311.0	29.8	25.0
Aug-07	107.6	308.8	29.8	24.3
Sep-07	101.4	300.0	27.9	21.8
Oct-07	110.0	312.0	34.9	28.6
Nov-07	114.0	315.0	36.00	30.40
Dec-07	109.40	310.60	33.20	25.60
Jan-08	112.9	314.3	33.5	28.9
Feb-08	108.6	310.6	32.3	29.8
Mar-08	102.1	307.6	30	27
Apr-08	109	310	33.4	29.2
May-08	104	305	32.4	28.9
Jun-08	102	303	30.1	28
Jul-08	109	310	33.4	29.2
Aug-08	95	292	29.4	25
Sep-08	103	310	33.3	30.4
Oct-08	107	312	34.5	30.5
Nov-08	104	309	32.3	28.2
Dec-08	102	311	33.4	29.7
Jan-09	113	315	34	30.1
Feb-09	107	311	33.3	29.5
Mar-09	103	310	32.4	29.5
Apr-09	105	312	30.8	27.4
May-09	101.4	308.3	33.1	29.3
Jun-09	99.01	291.8	28.9	25.7
Jul-09	101.8	305.5	30.8	27.3
Aug-09	96	283	30.9	28.7
Sep-09	103	310	33.3	30.4
Oct-09	107	313	35.2	32.5
Nov-09	104	318	33.8	31.2
Dec-09	102	315	31.5	28.7

Annexure - III

Water Quality of Borewell of Vatva Estate

DATE	pH	Colour	T.D.S.	Total Hardness	Fluoride as F	COD
Permissible limit	**6.5-8.5**	**5 ptco.**	**2100 mg/l**	**300 mg/l**	**1 mg/l**	**mg/l**
04/01/2007	7.54	5	1054	230	1.12	8
02/02/2007	7.28	5	1130	240	0.32	12
01/03/2007	7.6	5	1164	210	0.95	10
03/04/2007	7.7	5	1116	230	0.43	6
01/05/2007	7.86	5	1164	220	1.59	12
02/06/2007	8.02	5	1112	230	0.61	9
02/07/2007	7.47	5	1132	250	1.06	14
02/08/2007	7.31	0	1198	230	0.76	6
01/09/2007	7.76	0	1078	170	0.56	6
02/10/2007	7.78	0	1140	230	0.55	5
05/11/2007	7.3	0	1138	240	1.03	4
04/12/2007	7.32	0	1170	230	0.47	9
03/01/2008	7.45	0	1102	200	0.64	14
02/02/2008	8.46	0	1052	240	0.71	12
01/03/2008	7.33	0	1110	230	0.65	12
01/04/2008	7.34	0	1006	230	0.74	8
02/05/2008	7.66	0	1148	260	0.67	12
04/06/2008	7.33	0	1098	270	0.61	16
03/07/2008	7.21	0	1112	230	0.66	12
01/08/2008	7.28	0	1218	200	0.61	20
01/09/2008	7.48	5	1090	230	0.53	16
03/10/2008	8.49	0	1146	250	0.62	16
01/12/2008	7.8	10	1158	600	0.44	20
02/01/2009	7.52	10	1232	300	1.77	12
10/02/2009	8.42	10	1304	420	0.89	16
10/03/2009	8.89	5	1152	410	1.12	12
01/04/2009	8.9	5	1122	180		12
08/07/2009	7.55	5	1290	150		16
04/08/2009	8.29	10	1266	180	0.996	12
30/11/2009	8.18	5	996	200	0.58	12
05/10/2010	7.48	5	2216	240	0.35	8
02/12/2009	7.71	5	1022	160	0.36	12
02/02/2010	7.47	5	1070	170	0.52	16
03/03/2010	7.7	5	1190	300	1.08	12

Annexure – IV

Treated w/w Quality at CETP, Narol

Month	NH3-N,	B.O.D.	C.O.D.
Permissible Limit	**50 mg/l**	**30 mg/l**	**250 mg/l**
Jan, 2007	21	1500	3906
May, 2007	71	1400	3016
Jul, 2007	0.56	200	535
Aug, 2007	17	425	840
Sep, 2007	18	433	1585
Oct, 2007	77	1438	4604
Dec, 2007	62	567	1751
Jan, 2008	35.8	467	1290
Feb,2008	22.4	450	1062
Mar, 2008	46	280	696
May, 2008	11.2	148	558
Jun, 2008	3.36	75	164
Jul, 2008	2.24	208	660
Aug, 2008	16	250	1920
Sep, 2008	8.96	116	448
Oct, 2008	68	46	897
Jan, 2009	24.64	413	1139
Feb, 2009	19.4	392	890
Mar, 2009	19.04	228	544
Apr, 2009	18	348	854
May, 2009	7.82	210	584
Jun, 2009	3.36	20	100
July, 2009	28	187	535
Oct, 2009	1.68	10	47
Nov, 2009	2.24	24	88
Dec, 2009	8.96	102	478
Feb. 2010	0.28	44	212
April, 2010	3.73	255	803
May, 2010	9.52	243	772
July, 2010	10.08	173	750
Aug, 2010	6.10	41	98

Annexure – V

Ambient Air Quality at Narol

Month	RSPM	SPM	SO2	NOx
Permissible Limit	**100 µg/m³**	**200 Mg/m³**	**80 µg/m³**	**80 µg/m³**
Feb-07	215.71	638	22.22	39.94
Mar-07	230.25	673.67	18.54	37.4
Apr-07	221.87	559.4	18.52	33.62
May-07	241.21	549.17	21.04	33.94
Jun-07	223.71	506.83	20.65	32.19
Jul-07	173.75	395.25	19.26	32.84
Aug-07	184.35	431.43	18.91	32.24
Sep-07	232.92	541.21	21.05	34.14
Oct-07	234.5	559.53	21.11	34.94
Nov-07	197.5	552.8	16.4	28.9
Dec-07	200	505.21	18.27	33
Jan-08	180.43	610.23	18.55	29.04
Feb-08	185.92	598.21	17.29	26.99
Mar-08	182.93	586.46	18.27	27.12
Apr-08	174.03	567.93	15.97	24.58
May-08	191.3	591.7	13.28	24.17
Jun-08	185.65	546.39	15.38	26.68
Jul-08	179.86	483.66	14.11	22.73
Aug-08	158.5	421.75	13.79	20.8
Sep-08	159.93	400.9	12.22	17.43
Oct-08	181.6	423.4	18.2	26
Nov-08	142.6	386.6	11.4	17.2
Dec-08	167	379	13.8	18.3
Jan-09	148.5	328.67	12.64	17.11
Feb-09	144.88	305.71	13.71	18.29
Mar-09	155.67	342.63	15.32	20.18
Apr-09	176.13	418.54	17.82	22.43
May-09	180	428	20.94	25.4
Jun-09	186.4	437.27	21.08	28.44
Jul-09	178.52	423.35	30.96	27.05
Aug-09	177.87	427.1	20.83	27.2
Sep-09	192.96	444.29	23.77	28.4
Oct-09	186	440.5	21.34	28.29
Nov-09	172.63	418.03	21.75	27.4
Dec-09	176.17	422.83	21.48	26.93

Annexure – VI

Water Quality of River Sabarmati at Miroli

Month	NH3-N,	COD	BOD
Permissible Limit	**50 mg/l**	**250 mg/l**	**30 mg/l**
Jan, 2008	14.6	166	89
Feb,2008	16	271	132
Mar, 2008	17.92	272	170
Apr, 2008	8.96	104	53
May, 2008	29.12	168	82
Jun, 2008	16	183	90
Jul, 2008	20	179	103
Aug, 2008	24	232	135
Sep, 2008	13.44	352	162
Oct, 2008	21.28	379	131
Nov, 2008	23.52	428	160
Dec, 2008	23.52	202	123
Jan, 2009	5.6	456	141
Feb,2009	23.52	436	174
Mar, 2009	8.96	140	28
Apr, 2009	19	290	69
Jun, 2009	15.68	183	90
Aug, 2009	13	250	70
Sep, 2009	10	128	38
Nov, 2009	0.56	80	18
Dec, 2009	26.32	136	39
Jan, 2010	30	169	45
Feb,2010	2.8	28	6
Mar, 2010	0.56	104	27
May,2010	0.56	44	12
June, 2010	2.24	55	06
July, 2010	25	24	05
Aug, 2010	3.92	112	32
Sept, 2010	19	111	28

Annexure – VII

TREATED WASTEWATER QUALITY OF STPS

OLD VASNA SEWAGE TREATMENT PLANT -126 MLD

	T.D.S.	T.S.S.	B.O.D.	C.O.D.
	mg/l	mg/l	mg/l	mg/l
Jan-09	1214	38	142	430
Feb-09	1574	278	243	586
Mar-09	1268	20	31	111
May-09	1160	36	40	132
Jun-09	1164	14	50	176
Jul-09	1286	38	38	138
Aug-09	1322	22	23	68
Sep-09	1134	18	16	64
Oct-09	1010	20	15	59
Nov-09	1088	28	2	12
Dec-09	1138	20	16	68
Jan-10	1094	20	11	55
Feb-10	1036	20	23	80
Mar-10	1086	20	17	68
April-10	968	36	08	36
May-10	1084	30	20	64
June-10	678	266	12	55
July-10	1158	28	20	56
Aug-10	922	34	11	44
Sept-10	744	32	19	60

NEW VASNA TERMINAL SEWAGE PLANT- 76 MLD

	T.D.S.	T.S.S.	B.O.D.	C.O.D.
	mg/l	mg/l	mg/l	mg/l
Jan-09	1078	44	94	299
Feb-09	1060	88	184	426
Apr-09	826	10	73	285
May-09	852	44	83	251
Jun-09	1168	120	80	272
Jul-09	1002	258	91	308
Aug-09	870	170	91	232
Sep-09	768	76	21	76
Oct-09	742	106	15	51
Nov-09	1250	46	4	20
Dec-09	1074	56	22	104
Jan-10	762	26	33	399
Feb-10	808	104	59	208
Mar-10	788	76	53	184
April-10	1194	76	33	116
May-10	924	46	22	104

June-10	574	300	21	79
July-10	862	66	58	204
Aug-10	808	110	58	208
Sept-10	584	42	88	210

NEW PIRANA SEWAGE TREATMENT PLANT- 182 MLD

	T.D.S.	**T.S.S.**	**B.O.D.**	**C.O.D.**
	mg/l	**mg/l**	**mg/l**	**mg/l**
Jan-09	1082	86	97	303
Mar-09	1630	238	222	635
Apr-09	1466	28	211	605
May-09	1098	368	236	590
Jun-09	1474	276	182	500
Jul-09	1672	438	258	765
Aug-09	1838	368	304	760
Oct-09		1132	46	165
Nov-09	896	344	47	134
Dec-09	1170	338	135	524
Jan-10	1240	138	66	528
Feb-10	1032	302	115	484
Mar-10	934	318	107	460
April-10	1142	44	89	308
May-10	1192	234	74	228
June-10	854	472	106	375
July-10	8660	648	285	999
Aug-10	1074	210	98	424
Sept-10	858	118	217	566

OLD PIRANA SEWAGE TREATMENT PLANT – 106 MLD

	T.D.S.	**T.S.S.**	**B.O.D.**	**C.O.D.**
	mg/l	**mg/l**	**mg/l**	**mg/l**
Jan-09	960	-	54	147
Feb-09	1112	10	49	128
Mar-09	1716	38	78	290
Apr-09	1134	8	48	131
May-09	930	44	55	183
Jun-09	1014	16	59	184
Jul-09	1010	52	40	159
Aug-09	1132	38	22	104
Sep-09	954	20	14	68
Oct-09	838	20	5	27
Nov-09	1094	24	10	47
Dec-09	982	20	12	40
Jan-10	988	30	7	42
Feb-10	888	26	27	76
Mar-10	888	8	22	72

April-10	1028	26	33	146
May-10	924	08	09	48
July-10	972	30	22	76
Aug-10	752	16	71	175
Sept-10	386	28	20	75

Compliance status of Suggestions /comments of steering committee:

1.	Need for demarcation of Geographical boundaries and the impact zones in a digitized map.	Map already obtained and included.
2.	Long term and short term plans along with sector and region-wise action points have to be defined clearly with time line, cost and responsible implementing agencies/ stakeholders.	Covered under action points
3.	Major industry-based action plans should be prepared so that the problems of individual units could be identified and action points (long term and short term) be implemented within stipulated time-frame.	On the basis of the pollution potentiality, industries have been identified and specific directions issued. These directions are being presently under verification.
4.	Functioning of CETP/FETP/EPL/PETL in Ankleshwar should be reviewed and design should be re-checked on the basis of COD load, carbonaceous BOD, refractive COD through performance study.	-
5.	Appropriate action points should be incorporated in action plan to control flow of sewage in Amla Khadi and Chhapre Khadi in Ankleshwar.	-
6.	Groundwater quality should be assessed properly and taken into consideration and remedial measures should be incorporated for the improvement in groundwater quality.	Ground water monitoring is being regularly carried out.
7.	Quantification of pollution from non-point sources should be done and baseline data of VOC should be collected.	-
8.	Short-term and long term awareness programme should be incorporated.	This is regular activity. Recently two workshops organized.
9.	Online monitoring system linked with regional office and head office at-least at two stations (Ankleshwar and Panoli) should be included in plan.	Online monitoring of Ambient air monitoring of Maninagar area is recently started and at present linked with CPCB on trial basis.
10.	Scheme of plantation with clear defined policy should be	-

	incorporated to control odour problem in Ankleshwar.	
11.	GPS based transportation and tracking system for hazardous waste should be ensured.	Under consideration and planning stage.
12.	Action plans should clearly be defined with short term and long term actions including technological improvement in small scale sector and budgetary requirement for various works.	Identified pollution potential industries, common infrastructure facilities and other related Government agencies / departments have already submitted time bound technological improvement programme along with its financial outlay. Compliance verification for the same is also being done from time-to-time.
13.	DG sets should be provided at all pumping stations/ETPs/STPs to avoid overflow of untreated effluent during power failure in all clusters.	Installed at all common facilities.
14.	Efforts should be made for technological intervention (Green/clean technology) in all the industrial clusters where SSI's using old technology exist in cluster.	It is continuous process and same is under implementation stage.
15.	Efforts should be made for complete utilization / recycling of treated effluent in the industries and discharge in deep sea should be avoided for resource conservation.	Industries in textile cluster of Narol has started the reuse and recycling of treated effluent.
16.	Industrial and domestic waste should be treated separately.	Domestic waste water by an individual industry is mainly discharged into septic tank / soak pit system. Some also takes it with effluent for treatment and to maintain their biomass requirement.
17.	Action points for proper functioning of TSDF/CETP and FETP should be prepared.	Included at Action Point no. 7 of Short Term Action Plan of Water and at Action Point no. 2 of Hazardous Waste.
18.	Sectoral/regional/micro level plans for reduction/reuse/recycling of wastewater /awareness and control of fugitive emission for non-point sources should be prepared.	Included at Action Point no. 5 of Short Term Action Plan of Air.
19.	Action points for Groundwater management/VOC/HAPS control /noise pollution control should be incorporated in plan.	This has already been included under various action points of the Action Plan.
20.	Resource management plan/future development/managerial plan for new sitting of industries should also be incorporated.	-
21.	Quantification of pollutants needs to be done including solvent	-

	consumption of industries.	
22.	Health Impact Assessment Study to be undertaken.	Included at Action Point no. 11 of Short Term Action Plan of Water.
23.	Plan of Green Belt development to be incorporated.	Massive tree plantation has been taken up in the cluster. During this monsoon about 82,000 seedlings have been planted in GIDC Vatva while about 5,200 seedlings have been planted in Narol Industrial Area in this monsoon.
24.	Impact on CEPI score after implementation of short term and Long term Action points should be estimated.	Estimated and presented in chapter - 7 with Action Plan.
25.	Review of locations of existing Air, Water and Ground water monitoring stations and need of new stations with regard to density of Industries.	Under SAMP, NAMP, GEMS, MINARS etc. samples are collected regularly. However, need of new stations with regard to density of industries, if any, is being explored.
26.	Monitoring of all STPs and CETPs must be conducted regularly and should be recorded.	Monthly visit is being carried out and data of visit as well as analysis results can be made available using XGN.
27.	Plan for Municipal Solid Waste, plastic waste, Bio-medical and Hazardous Waste quantification and management. Present status need to be mentioned.	This has already been covered under action plan.
28.	GPS based continuous transportation and tracking system for hazardous waste in Ankleshwar.	Under consideration and planning stage.
29.	The plastic waste management in Vapi through co-processing in Cement Kiln would be more environment friendly rather than its conversion into Diesel to avoid sludge disposal problem.	-
30.	Vehicular pollution and Traffic management should be addressed in the action plan.	This is already covered under the Air Action plan of Ahmedabad city reviewed by Bhurelal committee.
31.	Magnetic flow meters/ electric meters with recorders should be used for flow measurements.	Included at Action Point no. 1 of Short Term Action Plan of Water.
32.	Action for reducing consumption of fresh water by the industries as per CREP recommendations based on consumption per unit production.	Compliance of CREP action points are being monitored. Additionally, provision of MEE and RO by various industries has resulted into recycling of water and thus total fresh water requirements have reduced.
33.	Action regarding capacity building	-

	of SPCB to ensure proper monitoring and compliance of action points.	
34.	Adoption of Principles of reduces, reuse, recycle & recover in action plan.	Included at Action Point no. 3 of Short Term Action Plan of Hazardous Waste.

S.N	Action point	Suggestion	
Action Plan for Water Pollution Control			
1.	1.1	Identification of units having effluent quantity > 25m3/day should also be taken into consideration to meet the flow standards as per design of CETP.	Implemented.
2	1.3	Installation of flow meters at the outlet of all ETPs connected to CETP should be incorporated as a short term plan.	Implemented in the GIDC Vatva and Included in action plan for Narol industrial area.
3	10	The scheme for upgradation of drainage system to remove the problem of choking of drains should be prepared by 31st December, 2010 and adequate measures suggested in scheme should be implemented.	Drainage network within the GIDC Vatva & Narol Industrial Area is installed, operated and maintained by respective Industrial Associations. Mega pipeline is regularly cleaned and maintained by the AMC.
Action Plan for Air Pollution Control			
4	2	Usage of gas in industries should be ensured based on the techno-economic feasibility study which should be completed before 31st December, 2010 and use of gas in	533 Nos. of units have been converted to Natural gas.

		industry should be ensured within one year	
5	5	Gujarat Pollution Control Board should also be involved as the implementing agency for control of fugitive emissions by keeping a vigil on the concerned industries.	Awareness program has been organized recently by the GCPC.
Other suggestions			
1.	Detailed health impact study should be carried out through a reputed agency.		Vatva Industrial Association has requested NIOH to carry out the study on health.
2.	CEPI should be evaluated for the same criteria pollutants considered by CPCB and various indices should be considered as per the standard guidelines mentioned in CPCB documents.		Expected CEPI is calculated on the same basis.
3.	CEPI should be evaluated on the basis of the real time data after implementation of short term and long term action plans.		Estimated and presented in Chapter 7 of Action Plan.
4.	Present status and future plan for greenbelt development should be incorporated as per the norms fixed in the master plan of the area with respect to area under greenbelt, no. and type of saplings.		Massive tree plantation has been taken up in the cluster. During this monsoon about 82,000 seedlings have been planted in GIDC Vatva while about 5,200 seedlings have been planted in Narol Industrial Area.
5.	Demographic details and water drainage pattern and road networks in 2 km buffer zone should be incorporated.		Road network is included in the map.
6.	Sector-wise and Industry-wise action points should be incorporated.		Sector wise and industry wise action plan has been formulated.
7.	Odour Problem resulting from VOC should be addressed along with capacity building of SPCB for VOC monitoring.		VOC analysis will be carried out by GEMI.
8.	Managerial and financial plans should be incorporated.		Financial plans are incorporated in the industry wise action points.
9.	GPS based tracking system for transport of hazardous waste should be incorporated.		Under consideration and planning stage.
10.	Online monitoring system linked with regional office and head office should be included in plan.		Online monitoring of Ambient air monitoring of Maninagar area is recently started and at present linked with CPCB on trial basis.
11.	DG sets should be provided at all pumping stations/ETPs/STPs to avoid overflow of untreated		Installed at all common facilities.

	effluent during power failure in all clusters.	
12.	Resource management plan/future development/managerial plan for new sitting of industries should also be incorporated.	At present there is no such proposal.
13.	Quantification of pollutants needs to be done including solvent consumption of industries.	
14.	Possibility of co-processing of hazardous waste may be explored and the same may be incorporated.	Included at Action Point no. 3 of Short Term Action Plan of Hazardous Waste.