

P R E F A C E

1. This Report on the audit of expenditure incurred by the Government of Maharashtra has been prepared for submission to the Governor of Maharashtra under Article 151 of the Constitution of India.
2. Chapter I of this Report covers auditee profiles, authority for audit, planning and conducting of audit and responses of the departments to draft paragraphs. Highlights of audit observations included in this Report have also been brought out in this chapter.
3. Chapter II contains findings of the performance audit of Slum Rehabilitation Schemes in Mumbai, Role of Maharashtra Pollution Control Board in Prevention and Control of Water Pollution in Maharashtra, Implementation of Soil and Water Conservation Programme in Agriculture Department, Vidarbha Irrigation Development Corporation and Working of the Directorate of Vocational Education and Training. Chapter III deals with the findings of transaction audits. Chapter IV deals with district-centric audit of Gondia District.
4. Audit observations on matters arising from the examination of Finance and Appropriation Accounts of the State Government for the year ended 31 March 2011 are presented separately.
5. The Report containing observations arising out of audit of Statutory Corporations, Boards and Government Companies and the Report containing observations on Revenue Receipts are presented separately.
6. The cases mentioned in this Report are among those which came to notice in the course of test audit of accounts during the year 2010-11 as well as those which had come to notice in earlier years but could not be dealt with in previous Reports. Matters relating to the period subsequent to 2010-11 have also been included, wherever necessary.

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Environment Department

2.2 Role of Maharashtra Pollution Control Board in Prevention and Control of Water Pollution in Maharashtra

Highlights

Water pollution means contamination of water or alteration of the physical, chemical or biological properties of water by discharge of various kinds of wastes into water, directly or indirectly, which renders water harmful for public health, health of animals, plants, aquatic organisms etc.

A performance audit of the role of the Maharashtra Pollution Control Board, which was responsible for implementation of various Acts and Rules in the State related to pollution, covering a period from 2006-07 to 2010-11 was conducted. It was noticed that the sources contributing to water pollution in the State had not been identified; industries were running without valid consents; domestic and industrial effluents were being released into water bodies without treatment etc.

Some of the significant findings are as follows :

None of the six test-checked Regional Officers had prepared the databases of the pollutants, sources of the same and pollution loads, as a result of which, risks to the environment and health caused by water pollution could not be assessed by the Maharashtra Pollution Control Board.

(Paragraph 2.2.6.2)

The Maharashtra Pollution Control Board did not initiate any action to prepare a river health booklet or identify any river for pilot study for abatement of water pollution.

(Paragraph 2.2.6.4)

There was no mechanism in place for monitoring the validity period of the consents granted to various industries by the Maharashtra Pollution Control Board. As of August 2011, 10,156 consent applications were pending for more than 120 days.

(Paragraph 2.2.8.1)

In 18 urban local bodies, domestic effluents were discharged without any treatment and in seven urban local bodies, the treatment capacity was in the range of 48 to 94 per cent vis-à-vis the sewage generation.

(Paragraph 2.2.9.1)

There were 14,737 water pollution-prone industries in the State of which 1,726 industries had only partial effluent treatment facilities and 356 industries had no effluent treatment facilities.

(Paragraph 2.2.10)

Common Effluent Treatment Plants and Effluent Treat Plants were found inadequate to treat industrial effluents and the treated effluents

exceeded the consented standard of Chemical Oxygen Demand and Biological Oxygen Demand.

(Paragraph 2.2.10.1)

Due to non-completion of the works under the National River Conservation Programme, untreated sewage water (around 27 million litres per day) was being discharged into the Krishna river at Sangli. At Nanded, though the work had been completed, the entire untreated sewage/waste water (60 MLD) was being directly discharged into the Godavari river due to non-commissioning of the programme.

(Paragraph 2.2.14)

Since 2000-06, 23 polluted river stretches were identified (July 2007) by the Central Pollution Control Board, which further increased to 28 by October 2010.

(Paragraph 2.2.15.2)

The number of water-borne diseases increased from 3.14 lakh in 2006-07 to 21.24 lakh in 2010-11, which indicated the failure of the respective authorities in mitigating water pollution.

(Paragraph 2.2.16)

In the six test-checked Regional Offices, there were shortfalls ranging from 16.83 to 52.51 per cent in collection of samples for testing, as of December 2010.

(Paragraph 2.2.17.2)

2.2.1 Introduction

Water pollution means contamination of water or alteration of the physical, chemical or biological properties of water by discharge of any sewage, trade effluent or substance of any kind into water, directly or indirectly which renders water harmful for public health, domestic, commercial, industrial, agricultural or other legitimate uses as well as health of animals, plants or aquatic organisms. Pathogens such as bacteria and viruses enter waterways through untreated sewage, storm drains *etc.*, and are harmful for human life. Untreated sewage and fertilizers contain nitrates and phosphates, which are harmful for aquatic life. Water pollution covers both surface water pollution and groundwater pollution. The major types of water pollution can be classified as municipal, industrial and agricultural water pollution, which affect the bio-diversity and ecology adversely.

The Maharashtra Pollution Control Board (MPCB) is responsible for implementation of the various Acts and Rules relating to water pollution in the State, which has four major rivers *viz.*, the Godavari, Krishna, Tapi and Narmada and a number of lakes, rivers and other water bodies, which make up its main sources of water.



MPCB, being a major regulator for implementation of environmental laws and pollution control in the State, plays an important role in securing sustainable development by enforcing various laws, rules, regulations *etc.* pertaining to prevention and control of pollution. It is also responsible for monitoring of pollution and for preventive and curative action.

The Water (Prevention and Control of Pollution) Act, 1974, a Central Act, was adopted by the Government of Maharashtra in 1981 to regulate water pollution in the State. The Act empowered MPCB to issue consents for operation of industries in the State and their periodical renewal. It also empowered MPCB to take action against the industries which did not adhere to the conditions laid down in the consents. In 1981, the Government of Maharashtra also adopted the Water (Prevention & Control of Pollution) Cess Act, 1977, which empowered MPCB to collect water cess from industries and local bodies. MPCB was also to initiate remediation or restoration projects by imposing remediation costs and penalties with the approval of the Central Pollution Control Board (CPCB). MPCB's primary role is of a regulator. However, it goes beyond regulations in order to advise all stakeholders involved in environment management and pollution control for compliance of the laws to organize the systems necessary for securing these objectives and also to sensitize the laws and their implications.

2.2.2 Organisational set-up

The State Environment Department headed by a Secretary, formulates the plans and programmes for meeting the statutory requirements regarding pollution and also oversees the working of the main pollution regulatory body, the MPCB. The activities of MPCB consist of capacity building, development of infrastructure, engaging services of professionals/environmental scientists, outsourcing of work, preparation and implementation of Action Plans for environmental management, environmental monitoring and enforcement of the various environmental legislations and Rules notified thereunder. The Member Secretary of MPCB executes the decisions taken by the Board. There are 12 Regional offices of MPCB, each headed by a Regional Officer (RO). MPCB has a Central Laboratory and six regional laboratories, which are attached to the concerned regional offices.

2.2.3 Audit objectives

The objectives of the performance audit were to assess whether:

- the planning process for identifying the sources of water pollutants was efficient and effective;
- the grant of consents to industries to establish and operate treatment plants was efficient and effective;
- the existing effluent treatment systems in the industries and non-industries was efficient and effective;
- the river water and coastal water quality was maintained; and
- a monitoring mechanism was in place to enforce control of water pollution effectively.

2.2.4 Audit criteria

The criteria adopted for the performance audit were:

- The Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988;
- The Water (Prevention and Control of Pollution) Rules, 1975;
- The Water (Prevention & Control of Pollution) Cess Act, 1977;
- The Environment (Protection) Act and Rules, 1986;
- Rules, orders, notifications and instructions issued by the Government/ Central Pollution Control Board (CPCB) from time to time.

2.2.5 Audit scope, coverage and methodology

A performance audit was conducted during January-May 2011 to assess the role of MPCB with regard to implementation of the Acts and Rules relating to water pollution in Maharashtra by MPCB. For the purpose, records covering the period 2005-11 of the office of the Environment Department (ED), the MPCB headquarters office and six⁴⁵ out of 12 Regional Offices (ROs) were test- checked. The ROs were selected on the basis of the number of pollution-prone industries in each region. Joint site visits were also conducted by Audit along with the officials of MPCB. An entry conference was held with the Secretary, Environment Department on 18 March 2010. Audit findings were discussed with the Secretary, Environment Department in an exit conference held on 21 September 2011. The Secretary accepted the recommendations. Responses received from the authorities concerned have been incorporated at appropriate places.

Audit findings

2.2.6 Planning process

2.2.6.1 Inventory of water pollution bodies

The Environment Department of the State had conducted (July 2009) a survey through MPCB to identify all the rivers in the State and prepare an inventory

⁴⁵ Aurangabad, Kalyan-Dombivali, Kolhapur, Nagpur, Nashik and Navi-Mumbai,

of river basins. However, surveys to identify all the lakes and groundwater resources, run-off streams, ponds and tanks was not conducted by MPCB. It was stated (February 2011) that there was no such programme envisaged to be a comprehensive responsibility of MPCB.

In the exit conference the Secretary, Environment Department stated (September 2011) that it had taken steps to get the inventory of all the major water bodies prepared in the State by satellite through the Maharashtra Remote Sensing Application Centre and had also directed all the ROs of MPCB to compile information regarding the water bodies in their regions, to rank them on the basis of pollution potential.

2.2.6.2 Database for identification of risk

As per Section 17 (1) (a) of the Water (Prevention and Control of Pollution) Act, 1974, the State Pollution Control Board has to plan a comprehensive programme for the prevention, control or abatement of pollution of streams and wells in the State and to secure the execution thereof. The National Water Policy 2002 also envisages development of an information system for water related data at the State level for resource planning. In order to plan the programme, the Board must have a detailed database of the pollutants, sources of the same and pollution loads.

Scrutiny of records revealed that none of the six test-checked ROs had prepared the database. As a result, risks to the environment and health caused by water pollution could not be assessed by MPCB.

In the absence of a data base, the pollution factor, pollution load *etc.*, were not ascertainable. Hence, MPCB was not able to exercise effective control over consent management⁴⁶ of the industries, pollution load assessment, planning for pollution abatement measures and the statutory function of dissemination of information to other agencies was not discharged. Further, lack of identification of risks of poor water quality on environment would result in irreversible species loss, destruction of habitats as well as impairment of the ecosystem.

MPCB stated (October 2011) that the database could not be prepared due to progress of work of inventorisation of industries and updation of the Master register.

In the absence of such vital information, the planning for water pollution abatement programme would be severely affected.

2.2.6.3 Comprehensive Action Plan to address water pollution

The Government had not formulated a separate policy for addressing water pollution in Maharashtra. It had not enacted legislations for ecological restoration of rivers, lakes and groundwater. Periodic and regular meetings of the Water Quality Review Committee⁴⁷ had taken place, but no steps had been taken to improve co-ordination between the Centre and the State. Thus policy,

⁴⁶ Issuing consents for establishment of industries and their periodic renewal

⁴⁷ A committee formed by the Government to review the water quality monitoring network; to review water quality; analyse and interpret data in order to identify problem areas and develop an action plan for improving water quality on a sustainable basis.

In the six test-checked Regional Offices, databases showing the factors contributing to water pollution were not maintained

legislations, Action Plan programmes to control water pollution were not prepared by the State Government.

In the exit conference the Secretary, Environment Department stated (September 2011) that a comprehensive Action Plan, to address the policy for abatement of water pollution, was pending before the state cabinet for approval.

2.2.6.4 Preparation of Action Plan to enhance water quality

Section 12 (5) of the Maharashtra Water Resources Regulatory Authority (MWRRA) Act, 2005 and Clause 2.3 of the Maharashtra State Water Policy 2003 envisaged preservation and enhancement of the water quality in the State. These provisions required the MWRRA⁴⁸ and MPCB to make special efforts to improve water quality (mainly river water) in the State. A meeting was convened by the MWRRA on 9 October 2007 with the officers of the MPCB to discuss the coordinated action to be taken by the MWRRA and MPCB for implementation of the above provisions and it was decided that:

- MPCB would bring out a river health booklet, with maps, for the State based on analysis of available river water quality data giving reach⁴⁹-wise details of river water quality, identification of industries and local bodies responsible for pollution in the reach with quantum of waste water generated by each and identification of very critical reaches needing urgent attention.
- MPCB would identify one or two river reaches for a pilot study on water quality improvement identifying all the industries, local bodies in the reach, the waste water generated by each, level of treatment and river water quality month wise at various points and suggest action plan to remedy the situation to enhance the water quality to an acceptable standard.

We noticed in audit that there was nothing on record to show that MPCB had initiated any action to prepare the river health booklet (with maps) or identified any river for pilot study for abatement of its pollution. However, in the exit conference the Secretary, Environment Department stated (September 2011) that Upper Bhima River was being considered for preparing a comprehensive Action Plan.

2.2.6.5 Preparation of Zoning Atlas

The Ministry of Environment and Forests (MoEF) introduced (1995) a Zoning Atlas programme with the financial assistance of the World Bank through the CPCB. It was envisaged that the Zoning Atlas would specify suitable locations to set up industries district-wise. MoEF accorded sanction (1994) to implement a project of preparing a Zoning Atlas for Siting of Industries (ZASI). Initially, zoning of Ratnagiri, Pune and Aurangabad districts was approved by the CPCB in October 2001 and CPCB sanctioned ₹ 36.95 lakh to

⁴⁸ It is an authority established to regulate water resources within the state of Maharashtra, facilitate and ensure judicious, equitable and sustainable management, allocation and utilisation of water resources *etc.*

⁴⁹ Stretches of river

MPCB during 2003-08 for this purpose. M/s Mitcon Ltd. Pune was invited by MPCB for the work of formulation of Zoning Atlas.

Scrutiny of records of MPCB revealed that the process of preparation of the Zoning Atlas in respect of Pune District was completed in February 2007 and submitted to the Industries Department, Government of Maharashtra for consideration of industry siting plan. The reports in respect of Ratnagiri and Aurangabad districts were not finalised though they were submitted to CPCB (September 2006) and the Government (February 2007) respectively for technical approval. The work order of preparation of the Zoning Atlases in respect of Latur and Nanded was issued (November 2008) to M/s. Development Alternatives, New Delhi and that of Nashik and Solapur districts was issued (November 2008) to M/s. GIS Enabled Environment & Neo-Graphic Center, Ghaziabad, however the same were yet to be finalised. The Zoning Atlas in respect of remaining districts was yet to be prepared.

In reply, MPCB stated (September 2011) that work for Latur, Nanded, Nashik and Solapur districts was in progress and the draft reports had been presented to District Collectors and stakeholders. MPCB also stated that the process had been delayed due to delay in finalizing the methodology for preparing Zoning Atlas and non-receipt of guidelines for expenditure out of Cess Funds from CPCB.

The reply is not acceptable as MPCB being entrusted with the responsibility of prevention and control of water pollution should have ensured timely preparation of Zoning Atlases.

2.2.7 Financial Management

2.2.7.1 Funds and expenditure

Financial resources and their utilization by MPCB during 2005-11 were as given in Table 1.

Table 1: Financial Resources and its utilization by MPCB (₹ in crore)

Year	Opening Balance	Assistance from CPCB/GOI	Reimbursement of Water Cess from GOI	Internal Resources	Interest on Investment	Total	Expenditure	Closing Balance
2005-06	50.69	5.77	9.14	52.45	3.59	121.64	76.13	45.51
2006-07	45.51	1.51	11.74	60.10	2.96	121.82	61.87	59.95
2007-08	59.95	4.75	16.97	43.06	11.17	135.90	45.44	90.46
2008-09	90.46	5.65	25.97	53.18	9.56	184.82	45.35	139.47
2009-10*	139.47	5.52	10.66	50.52	9.70	215.87	47.54	168.33
2010-11*	168.33	0.68	12.76	57.50	9.90	249.17	76.25	172.92

Source MPCB

* Accounts for the year 2009-10 and 2010-11 were not prepared by MPCB

The above figures of resources and their utilisation include all prevention and control of pollution activities like air pollution, water pollution, solid waste management, bio-medical waste *etc* because separate figures for water pollution activities were not available with MPCB. In view of this, it was not possible for Audit to specifically comment on the utilization of resources for water pollution.

While the total funds including internal revenue of MPCB increased from ₹ 121.64 crore in 2005-06 to ₹ 249.17 crore in 2010-11, the expenditure decreased from ₹ 76.13 crore in 2005-06 to ₹ 47.54 crore in 2009-10 and again increased to ₹ 76.25 crore in 2010-11.

In reply, MPCB stated (May 2011) that during 2010-11, expenditure increased to ₹ 76.25 crore mainly due to increase in financial assistance from cess (₹ 10.66 crore), in 2009-10 to ₹ 12.76 crore in 2010-11. Further, there was expenditure on awareness programmes and publicity (₹ 1.75 crore) and purchase of equipments and fixed assets (₹ 11.03 crore).

2.2.7.2 Under-utilization of cess funds received from CPCB

According to the instructions⁵⁰ issued (December 1998) by GOI, MoEF, up to 80 per cent of the cess amount collected from local bodies and industries towards water consumption by the Pollution Control Boards in the States were to be reimbursed to the Boards in accordance with Section 8 of the Water (Prevention and Control of Pollution) Cess Act, 1977 for meeting their approved expenditure requirements. It was observed that;

a) GOI's 80 per cent share for the period from 1983-84 to 2009-10 amounting to ₹ 80.38 crore was receivable as reimbursement against which ₹ 12.77 crore was received and ₹ 67.61 crore remained outstanding. (Appendix 2.2.1).

b) The expenditure incurred on office operations and establishment of the Pollution Control Boards of the States was not to exceed 25 per cent of the amount so reimbursed and the remaining 75 per cent was to be utilized on programmes and activities directly related to the prevention and control of pollution. However, MPCB did not utilize the funds as per the prescribed norms. There was underutilization of funds⁵¹ ranging between ₹ 18.88 crore to ₹ 42.95 crore on activities relating to prevention and control of pollution during the period of 2005-06 to 2008-09⁵², while ₹ 13.18 crore to ₹ 25.95 crore was utilized in excess on establishment during the same period as shown in Table 2.

Table 2: Utilisation of funds received from CPCB (₹ in crore)

Year	Purpose of utilisation (Percentage)	To be utilised	Actually utilised	Short (+)/excess utilisation (-) less utilisation
2005-06	Office and establishment (25)	24.55	42.22	(-) 17.67
	Pollution control activities (75)	73.64	30.69	42.95
2006-07	Office and establishment (25)	27.48	44.10	(-) 16.62
	Pollution control activities (75)	82.45	53.79	28.66
2007-08	Office and establishment (25)	31.73	44.91	(-) 13.18
	Pollution control activities (75)	95.18	70.73	24.45
2008-09	Office and establishment (25)	38.22	64.17	(-) 25.95
	Pollution control activities (75)	114.65	95.77	18.88

Source: MPCB

⁵⁰ MoEF, GOI order No. Q 17011/1/88-CP dated 28 December 1998

⁵¹ This includes all prevention and control of pollution activities like air pollution, water pollution, solid waste management, bio-medical waste etc.

⁵² Figures for the year 2009-10 and 2010-11 were not furnished as the accounts are yet to be audited

MPCB replied (January 2010) that underutilization of funds was due to delay in sanctioning of schemes and delayed issue of guidelines for schemes by CPCB.

The Government stated (September 2011) that excess expenditure on office and establishment from 2005-06 onwards was due to provisioning of funds for pension which was shown as expenditure. However, the same was invested in fixed deposits by MPCB. Underutilization of cess funds for pollution control activities was because the schemes were under progress or schemes were yet to be started or schemes were awaiting administrative approval or financial sanction. The fact remains that funds were underutilized for pollution control activities and excess expenditure was incurred under office and establishment, which was against the norms fixed for utilization of cess funds.

2.2.7.3 Outstanding recovery of cess on water

The Water (Prevention & Control of Pollution) Cess Act, 1977 provided for levy and collection of cess based on water consumed by industries and by local bodies. The cess was meant to augment the resources of the Central and State Pollution Control Boards for prevention and control of water pollution. The cess, so collected by the State Pollution Control Boards were to be remitted to CPCB, which in turn was to remit back 80 *per cent* of the cess to the State Pollution Control Boards. Under Section 10 of the Act, if any industry or local authority failed to pay the cess payable under Section 3 to the State Government within the date specified, they were liable to pay interest at the rate of two *per cent* on the amount to be paid for every month or part of a month from the due date till such amount was actually paid. Scrutiny of records of MPCB revealed that:

- An amount of ₹ 50.60 crore was outstanding on account of cess on water consumed for the period from April 1983 to March 2009 by 17 local bodies (₹ 14.68 crore) and six industries (₹ 35.92 crore). Interest payable for delay in payment of cess as specified under the Act was not levied from the defaulters.
- Out of 253 local bodies in the State, the assessment of cess for only 240 local bodies was done by MPCB up to March 2010. The assessment of cess for 13 local bodies was not done since these were newly added. However, assessment notices had been issued to them by MPCB in July 2010.

The Government stated (September 2011) that many letters, payment notices and reminders were issued to all the local bodies to make the payments immediately to MPCB and continuous efforts were being made to recover the dues from local bodies and industries.

2.2.8 Functions of Maharashtra Pollution Control Board

The important regulatory functions of MPCB include issuing of consents to industries to establish and to operate, issuing consents to local bodies to discharge of domestic effluents (sewage water) into the water resources, monitoring and watching compliance of the consent conditions and taking control measures whenever deviations are observed.

2.2.8.1 Grant of consents to industries and local bodies by MPCB

As per Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 no person should, without the previous consent of the State Pollution Control Board, establish or take any steps to establish any industry, operation or process or any treatment and disposal system, which is likely to discharge sewage or trade effluents into a stream or well or sewer or on land. The consent would be granted within 120 days from the date of application (vide Section 25(7) of the Water Act, 1974), failing which, it would be treated as a deemed consent. Urban local bodies are also required to obtain consents for operating sewage treatment plants to treat the domestic effluents generated in their municipal areas. Delays of over 120 days in giving consents would mean that the consents were deemed to have been granted.

As of 21 August 2011, 10,156 applications for grant of consent were pending beyond the prescribed limit of 120 days

Scrutiny of records of MPCB revealed that 10,156 consent applications were pending for more than 120 days as of 21 August 2011. There was no mechanism in place for monitoring the validity period of the consents granted to various industries.

MPCB stated (November 2011) that the applications received recently were under process and remaining was pending for want of compliance to queries. Though MPCB communicated the queries to the industries, the fact remains that there was no monitoring mechanism to ensure granting of consent to the industries within the prescribed time limit.

2.2.9 Treatment of domestic effluents

The Twelfth Schedule under Article 243W of the Constitution of India entrusts urban local bodies with the duties of protection of the environment and promotion of ecological aspects, which include water supply, sewerage *etc.* Further, as per Section 17 (1) (f) of the Water (Prevention and Control of Pollution) Act, 1974, MPCB is required to inspect sewage or trade effluents for their treatment.

2.2.9.1 Inadequate treatment of domestic effluents

Scrutiny of the records of MPCB revealed that there were 150 local bodies under the jurisdiction of six test-checked ROs but Sewage Treatment Plants (STPs) were provided by only eight⁵³ local bodies. The status of domestic effluents generated and treated in these STPs as of March 2010 is detailed in **Table 3.**

⁵³ Aurangabad Municipal Corporation, Nanded Waghala Municipal Corporation, Kalyan-Dombivli Municipal Corporation, Nasik Municipal Corporation, Navi Mumbai Municipal Corporation, Sangli Miraj Kupwad Municipal Corporation, Nagpur Municipal Corporation and Kolhapur Municipal Corporation

Table 3: Domestic effluents generated and treated in test-checked ROs

Name of Regional Office	Name of city under R.O	Quantity of domestic effluent generated (MLD) ⁵⁴	STP treatment capacity (MLD)	Effluent disposed without treatment (MLD)	Treatment Gap (Percentage)
Aurangabad	Aurangabad	107	6.5	100.5	94
	Jalna	18.35	0	18.35	100
	Latur	21	0	21	100
	Beed	11	0	11	100
	Nanded	60	0	60	100
	Parabhani	24	0	24	100
Kalyan	Kalyan	184	30	154	84
	Ambernath	24	0	24	100
	Kulgaon-Badlapur	18	0	18	100
	Bhivandi-Nizampur	84	17	67	80
	Ulhasnagar	88	0	88	100
Nashik	Nashik	250	130-140	110-120	48
	Jalgaon	48	0	48	100
	Bhusaval	11.4	0	11.4	100
	Malegaon	15	0	15	100
	Dhule	28	0	28	100
	Ahmednagar	35	0	35	100
Navi Mumbai	Navi Mumbai	136	136	0	0
Nagpur	Nagpur	350	100	250	71
	Wardha	5.18	0	5.18	100
	Gondia	4.83	0	4.83	100
	Chandrapur	29.7	0	29.7	100
Kolhapur	Kolhapur	90	43.5	46.5	52
	Ichalkaranji	37	0	37	100
	Sangli-Miraj	40	13*	40	100
	Kupwad				

Source: Report on Status Evaluation of STPs in Maharashtra(MPCB)
 *As the STP at Sangli was not in working condition, all the effluents were discharged into the Krishna river without treatment.

Majority of the domestic effluents were discharged without treatment

Therefore, in 18 out of 25 cities in the test-checked ROs, domestic effluents were discharged without any treatment and in seven cities (except Navi Mumbai) the gap between sewage generation and treatment capacity was in the range of 48 to 94 *per cent*. This indicated that the status of treatment of domestic effluents in the test-checked ROs was far from satisfactory. The reasons for not providing of STPs in 18 cities were not intimated by MPCB.

In reply to an audit query, the ROs stated (March-April 2011) that warning notices and show-cause notices had been issued to all the defaulting local bodies discharging effluents without any treatment.

2.2.9.2 Functioning of STPs

As stated above, there were gaps between the sewage generated and the actual sewage treated. These gaps resulted in environmental degradation of water

⁵⁴ Million Litres Daily(MLD)

bodies. In this background, it was imperative that the sewage was treated efficiently and effectively.

Joint visits (March-April 2011) to seven STPs in the test-checked ROs along with MPCB officials revealed the following:

(i) STP at Adharwadi, Kalyan

In the STP at Kalyan, we noticed that a flow meter to measure the quantum of inflow and outflow of sewage had not been installed. Therefore, the actual inflow and outflow of sewage could not be ascertained. The secondary digester⁵⁵ had not functioning since 1990, resulting in non-degradation of sewage at this stage. Alternative power supply arrangements required for treatment of sewage during load shedding were not made by the Municipal Corporation.



Secondary Digester of the STP at Adharwadi

Kalyan Dombivli Municipal Corporation stated (October 2011) that tenders to upgrade the STP with diesel generator back-up had been issued in September 2011.

(ii) STP at Chehedi, Nashik

The work on the STP, with a capacity of 22 MLD, was sanctioned in March 2001 at a total cost of ₹ seven crore. Though the project was scheduled for completion by March 2003, it was actually completed in June 2007 after a delay of four years and three months. The delay was attributed to reasons like non-acquisition of land, change in design, increase in span of rainy seasons *etc.* On completion of the STP, it did not perform up to full treatment capacity due to non-pumping of adequate quantity of sewage and STP treated only 15 MLD of sewage. The rest of the sewage (seven MLD) remained untreated and was being discharged into the Godavari river, defeating the purpose for which the STP was constructed.

The Secretary, Environment Department, replied (September 2011) that the delay of work was due to the land acquisition issues, changes in design and increase in the span of the rainy season. Further, the STP treated only 18

⁵⁵ A tank where sewage is degraded to a certain limit. After treatment in the primary digester, effluents are transferred to the secondary digester to ensure that the biological oxygen demand level is maintained and then transferred to a 'centrifuge', which removes sludge from effluents before discharging the same into nearby *nallahs* or creeks.

MLD of average sewage due to an inadequate sewerage network, the improvement of which had been taken up under JNNURM and was still under progress.



STP at Chehedi, Nashik

(iii) Old Ganeshwadi Pumping Station, Nashik

At the Old Ganeshwadi Pumping Station, Nashik, it was noticed that the sewage pumping station had a capacity of 22 MLD. The sewage collected on an average was 22 to 28 MLD at this pumping house and thus was more than its capacity. Moreover, the untreated sewage from the entry point of the sewage pumping station was found to be overflowing into the River Godavari, which was the primary source of drinking water in the area and polluting it.

The Nashik Municipal Corporation replied (March 2011) that the pumping station was renovated with a revised capacity of 25 MLD and an overflowing pipe was provided for maintenance purposes during emergencies. However, the audit observation during the field visit was confirmed by the department. It was stated that an overflow pipe was provided to direct sewage of the outfall sewer during emergency.

The reply is not acceptable since even after upgradation, the revised capacity remained lower than the maximum average of 28 MLD sewage received at the pumping house, which showed lack of proper planning and estimation.

(iv) STP at Nanded

At the STP at Nanded, it was noticed that the sewage pumping station near the old bridge at Nanded was not in working condition, as a result of which all effluents intercepted were being discharged into the Godavari River without treatment. Municipal solid waste generated was dumped on the bank of Godavari River unscientifically. As such, the possibility of heavy contamination of the Godavari river due to discharge of leachate⁵⁶ could not be ruled out.

⁵⁶ Liquid that seeps through solid wastes or other medium and has extracts of dissolved or suspended material from it;

2.2.10 Pollution by industries

Characteristics of industrial waste water can differ considerably, both within and among industries. The impact of industrial discharges depends not only on their collective characteristics, such as biochemical oxygen demand and the amount of suspended solids, but also on their content of specific inorganic and organic substances. Water pollution caused by major industries can be controlled at the point of generation by constructing effluent treatment plants (ETPs) for individual industries and common effluent treatment plants (CETPs) for clusters of medium and small-scale industries.

Scrutiny of records of MPCB revealed that there were 14,737 water -pollution prone industries in the State, including 8,737 in the six test- checked ROs. Out of them, 12,655 industries had adequate treatment facilities (7,516 in test-checked ROs), whereas 1,726 industries had partial effluent treatment facilities (905 in six test-checked ROs) and 356 industries in the State (316 in six test-checked ROs) had no effluent treatment facilities. There were only 20 CETPs in Maharashtra covering seven (ROs) and the remaining five (Aurangbad, Nasik, Chandrapur, Mumbai and Amravati) ROs had no CETPs under their jurisdiction. Due to non-installation of ETPs untreated effluent flows into the nearby water bodies causing water pollution. The details of the CETPs/ETPs *etc.*, are given in **Table 5**.

Table 5: Status of ETPs and CETPs in test-checked ROs as of March 2010

In the State as a whole		In test-checked ROs						Total in ROs
		Navi-Mumbai	Kalyan	Nashik	Aurangabad	Nagpur	Kolhapur	
Pollution prone industries	14737	1144	1078	2402	751	687	2675	8737
Industries having adequate facilities (ETPs)	12655	1144	792	2313	701	567	1999	7516
Industries with partial treatment facilities (Water)	1726	0	1	89	48	93	674	905
Industries without Treatment facilities(Water)	356	0	285	0	2	27	2	316
Number of CETPs operating	20	2	5	--	--	1	3	11
Number of CETPs under construction/ yet to be commissioned	6	--	1	--	1	--	4	6

Source: MPCB's Statistical Report, 2009-10

Though MPCB had issued proposed directions⁵⁷ to the defaulting industries, no legal action was taken as required under Section 33(1) of the Water (Prevention and Control of Pollution) Act, 1974 to ensure adequate treatment of effluents by these industries.

⁵⁷ As per Rule 4 of the Environment (Protection) Rules, 1986 proposed directions issued under Section 5 of the EPA specify the nature of action to be taken and the time within which it shall be complied giving an opportunity of not less than 15 days to file objections to the proposed directions.

CETPs and ETPs were found inadequate to treat the industrial effluents and the treated effluents also did not conform to the standards

2.2.10.1 Consented standards not maintained by CETPs

The objective of establishing CETPs was to set up economical effluent treatment facilities for small-scale industries before disposal of the treated water into streams, rivers or seas. CETPs were to be set up in industrial estates where there were clusters of small-scale industrial units and where many polluting industries were located.

Scrutiny of records in the test-checked ROs revealed the following:

- There were no CETPs under the jurisdiction of the ROs concerned in Aurangabad, Nasik, Ratnagiri and Sangli districts though there were 7931, 15318, 444 and 608 industries respectively under their jurisdiction. In reply, RO Nasik stated (March 2011) that a proposal for establishment of CETPs had been forwarded (July 2010) for approval to the Maharashtra Industrial Development Corporation.
- In respect of five CETPs under the jurisdiction of the RO, Kalyan and two CETPs under the jurisdiction of RO, Navi Mumbai, Chemical Oxygen Demand (COD)⁵⁸ in the treated effluents ranged from 326 to 3740 mg/l, thereby exceeding the consented COD limit of 250 mg/l.
- Out of the five CETPs under RO Kolhapur, three CETPs were in operation and two CETPs *i.e.*, Ichalkaranji Textile Development Cluster Ltd. and Parvati Co-operative Industrial Estate had not been commissioned as of December 2010. Construction of a CETP had not been started by the Parvati Co-operative Industrial Estate and construction was in progress in the Ichalkaranji Textile Development Cluster Ltd. area. As a result, effluents generated from the industries were discharged without treatment into a nearby *nallah*, which was flowing into the Krishna river and polluting it.
- There was one CETP in the jurisdiction of RO, Kolhapur (Chiplun) in the MIDC area of Lote Parshuram, the capacity of which was 4.5 MLD. However, the quantity of effluents generated was six MLD. The analysis report of the treated effluents showed high Biological Oxygen Demand (BOD)⁵⁹ of 850 mg/l against the prescribed limit of 100 mg/l and COD of 1750 mg/l against the prescribed limit of 250 mg/l. Hence, it was clear that untreated effluents were being discharged into the Dabhol creek, which was located nearby.
- A joint visit along with the officials of MPCB revealed that the consent to operate a CETP at MIDC Butibori, Nagpur, had expired on 31 January 2011. The consent was not renewed by MPCB as the effluents received were in excess of the CETP's designed capacity (five MLD). MPCB stated (April 2011) that the consent would be renewed after augmentation of the capacity of the existing CETP. In reply, MPCB further stated that augmentation work was in progress and after that, consents would be granted. The decision of the MPCB was flawed as it should have ensured full treatment of effluents flowing into the CETP before the renewal dates of the consents of the industries which were connected to it. Till

⁵⁸ A measure of chemically oxydizable organic matter

⁵⁹ A measure of biodegradable organic matter

augmentation of the CETP was completed, untreated effluents would flow into the river.

2.2.10.2 Adherence to consented standards by industries

The consent to operate is granted to industries by MPCB under Section 26 of the Water (Prevention and Control of Pollution) Act, 1974 and Section 21 of the Air (Prevention and Control of Pollution) Act 1981, which require an industry to provide a comprehensive effluent treatment system consisting of primary, secondary and /or tertiary⁶⁰ treatment as is warranted with reference to influent quality and operate and maintain the same continuously so as to achieve the quality of treated effluents as per MPCB specifications.

Scrutiny of records in respect of five out six test-checked ROs revealed that the treated effluents released by the industries had a very high biological oxygen demand (BOD) and chemical oxygen demand (COD) content compared to the prescribed consent conditions. The effluents discharged by the industries after treatment by ETPs did not conform to the norms as detailed in **Table 6**.

Table 6 : Range of BOD and COD in the test-checked ROs

Sr. No.	Region	Number of industries exceeded the consented limits during 2009-11	BOD range (norm: 100 mg/l)	COD range (norm: 250 mg/l)
1	Aurangabd	22	120-6050	300-9600
2	Kalyan	6	170-2800	440-5680
3	Kolhapur	25	140-5500	320-2400
4	Nashik	21	110-1500	280-2800
5	Nagpur	9	105-3500	316-3200

Source: JVS test reports of ROs

This pointed towards serious deficiencies in the treatment process being followed by these industries. This also seems to show that MPCB did not conduct adequate number of inspections and even if they did so, the inspections were likely to have been perfunctory.

The concerned ROs replied (April 2011) that show-cause notices and proposed directions had been issued (November 2010) to the industries under the Section 33A of Water (Prevention and Control of Pollution) Act, 1974.

The reply is not acceptable as apart from issuing notices, MPCB should have directed the water and electricity supplying agencies to stop services until the fulfilment of requirements under Water (Prevention and Control of Pollution) Act, 1974

2.2.11 Joint visits to industries

(i) M/s Konkan Marine Export & Karunya Marine Export, Ratnagiri

It was noticed that the flow meter of the ETP was not installed to the inlet to measure the quantities of effluents generated and treated. Samples were tested

⁶⁰ Primary treatment is removal of floating and suspended solids from sewage. In secondary treatment, biological methods such as digestion are used and tertiary treatment removes all but a negligible portion of bacteria and organic matter.

by MPCB once in three months instead of monthly as prescribed in MPCB's sampling norms. MPCB had not been monitoring groundwater quality in the premises of M/s Konkan Marine Export & Karunya Marine Export, Ratnagiri.



**M/s Konkan Marine Export & Karunya Marine Export, Ratnagiri
discharging effluents into sea**

(ii) M/s Gadre Marine Export Pvt. Ltd., Ratnagiri

The ETP of M/s Gadre Marine Export Pvt. Ltd., Ratnagiri was not working properly as the final effluent analysis (done by the company in its laboratory) report (February and March 2011) indicated that oil and grease in the treated effluents ranged from 21 to 145 mg/l against the consented limit of 10 mg/l and total dissolved solids ranged from 2187 to 2620 mg/l against the consented limits of 2100 mg/l. A flow meter had also not been installed to assess the quantity of inflow and outflow of the effluents. The final discharge into the sea was also not at the point designated by the National Institute of Oceanography (NIO).



**M/s. Gadre Marine Export Pvt. Ltd., Ratnagiri,
Flow meter at inlet point not installed**

2.2.12 Status of compliance of "Corporate Responsibility for Environmental Protection" (CREP) norms

Ministry of Environment and Forests (MoEF) launched a Charter on CREP in March 2003 with the purpose of going beyond the compliance with regulatory norms for prevention and control of pollution. The Charter set targets concerning conservation of water and disposal of pollutants in an

environment-friendly manner. The Charter enlisted action points for pollution control for 17 categories of highly polluting industries, which were not complying with the standards notified under the Environment (Protection) Act, 1986. The State Pollution Control Boards were responsible for monitoring these industries.

Scrutiny of records in five out of the six test-checked ROs⁶¹ revealed that out of 182 industries notified under the CREP norms, 89 had not complied with the norms while 47 industries had partially complied with the norms. Non-compliance with CREP norms would result in environmental pollution.

The concerned ROs stated (March-April 2011) that proposed directions⁶²/interim directions⁶³ had been issued (February 2011), as required, to all the non-complying industries.

2.2.13 Other sources of water pollution

Sources of water pollution can mainly be divided into two categories *viz.*, point source of pollution and non-point source of pollution. Point sources of pollution are identified sources such as industrial effluents and domestic effluents emitting harmful effluents directly into water bodies and thus can be monitored and regulated. Non-point sources of pollution are unidentified sources delivering pollutants indirectly through transport *e.g.* flowing *nalla* or environmental changes⁶⁴, which are much more difficult to monitor and control.

2.2.13.1 Pollution from slaughter houses

Standards for discharge of effluents from slaughter-houses have been laid down and notified under the Environment (Protection) Act, 1986. Abattoirs generally use large quantities of water for washing meat and cleaning processing areas. CPCB had prescribed (January 2001) that waste water discharged from slaughter-houses should be treated appropriately to meet the prescribed standards. Discharge of untreated effluents from these slaughter-houses could result in increase in pathogens which may percolate and contaminate groundwater.

Scrutiny of the records of the six test-checked ROs revealed that there were 56 slaughter-houses under their jurisdiction. Out of these, 39 were functioning without any consent from MPCB and had not even applied for the consents and 17 had applied for consent. An ETP was provided in only one slaughter-house at Aurangabad, while 55 slaughter-houses were discharging their effluents without treatment through open drains which were finally flowing into the water bodies near them.

⁶¹ RO, Aurangabad; RO, Navi Mumbai; RO, Nagpur; RO, Nasik; and RO, Kolhapur

⁶² A notice issued to defaulting industries warning them for their non-compliance of the consent conditions even after issue of show cause notices and allowing them to represent themselves.

⁶³ A direction issued to an industry prior to directions for its closure so as to give a final opportunity to the industry for rectifications.

⁶⁴ Water gets contaminated with pollutants present in the environment during the course of its flow. Environmental changes can also cause water pollution.

The ROs stated (March-April 2011) that action had been taken against the slaughter-houses by issuing proposed directions (July 2008) to the concerned local bodies such as Aurangabad Municipal Corporation, Nashik Municipal Corporation *etc.* However, closure directions or direction to cut water and electricity supply, under Section 33A of the Water Act, 1974, to the concerned abattoirs had not been issued.



Effluents released into an open soak-pit



Abattoir releasing effluents and solid wastes

Though MPCB issued proposed directions and show-cause notices to the respective municipal corporations, provisions of Section 41 to 44⁶⁵ of Water (Prevention and Control of Pollution) Act, 1974 dealing with prosecution of defaulting slaughter-houses, were not invoked.

2.2.13.2 Disposal of waste from dairies

There are 106 dairies operating in the State, which do not have effluent treatment facilities. These dairies discharge their effluents into drains, agricultural land, open *nallas* and gutters and they ultimately reach the water bodies nearby (**Appendix 2.2.2**). These dairies were discharging (as of May 2011) around 10 MLD of effluents into the water bodies. MPCB issued show-cause notices in six cases, proposed directions in five cases, interim directions in one case and closure directions⁶⁶ to one of these polluting dairies. In respect of the remaining 93 dairies, action was still to be initiated (March 2010). Discharge of untreated effluents from dairies would result in increase in harmful microbes affecting the water quality of the receiving water bodies.

MPCB stated (October 2011) that now there were only 31 defaulting dairies against which action had already been initiated by them.

⁶⁵ Section 41: Failure to comply with directions under sub-section (2) or sub-section (3) of section 20, or orders issued under clause (c) of sub-section (1) of 32 or directions issued under sub-section (2) of section 33 or section 33A, Section 42: Penalty for certain acts, Section 43: Penalty for contravention of section 24 and Section 44: Penalty for contravention of section 25 or section 26

⁶⁶ The final direction issued to close down an industry

2.2.13.3 Pollution caused by cattle sheds

MPCB issued (February 2001) guidelines for prevention of pollution caused by cattle sheds. MPCB had also laid down guidelines for location of cattle sheds. The total number of cattle sheds existing in the State was not available with MPCB. The waste water generated due to washing, leaching *etc.* in the cattle sheds, found its way into nearby *nallas*, ultimately meeting either a water body or into the drainage system provided by municipal corporations for the disposal of routine domestic liquid waste.

As stated by the respective municipal corporations, there were 167 cattle sheds with 6,153 cattle in Kalyan-Dombivli, 1,150 cattle sheds with 8,000 cattle in Nagpur and 69 cattle sheds with 1,532 cattle in Navi Mumbai located in corporation areas. Though these cattle sheds had a number of buffalos and other animals which generated huge quantities of waste, there were no arrangements for collection of the waste dung, liquid wastes *etc.*, and storage thereof until disposed off. Though guidelines provided for locations of cattle sheds, no survey to locate all cattle sheds in the State was done by MPCB.

The RO, Aurangabad stated (April 2011) that large cattle sheds having more than 10 animals were not present in Aurangabad. RO, Kalyan was in the process of shifting these cattle sheds outside the corporation areas and the other ROs stated that they had not conducted any such survey. RO, Kalyan stated (March 2011) that due to a financial crunch, the Kalyan Municipal Corporation could not acquire land for shifting of cattle sheds. He had requested the Collector, Thane to provide land free of cost. RO, Navi Mumbai did not offer any specific reply to the audit observations and stated (October 2011) that licences to cattle sheds were issued by the District Dairy Development Officers.

2.2.13.4 Issue of consents to Railway Workshops

Central Railways has workshops in Maharashtra, located at Matunga, Manmad, Bhusawal, Parel, Khurduwadi, Byculla and Nashik Road. These workshops use chemicals for their water-cooling systems. The water from the workshops is discharged into local drains. Since the waste water contains high levels of oil and grease, these pollutants should be removed from the water before discharge to the water bodies through non-point sources. However, it was seen in audit that this was not being done. The Railway workshops should have obtained consents from MPCB for carrying out their activities. It was observed that only two workshops *i.e.*, Central Railway, Matunga and Central Railway, Locomotive Workshop, Parel which repair and maintain coaches and locomotives had obtained consents to operate from MPCB.

MPCB replied (July 2010) that out of seven, two workshops (Lower Parel and Bhusawal) had applied (July 2010) for consent. The workshop at Bhusawal had a valid consent up to 30 August 1992 only. The fact remains that MPCB had failed to take action and issue directions in pursuance of Section 5 of the Environment Protection Act.

2.2.13.5 Environmental problems in religious places

MPCB, in its 139th Meeting held in January 2004, considered that the environmental problems in religious places were serious and decided to

implement a project on environmental improvement of religious places. For this purpose, MPCB engaged (July 2010) the services of a consultant⁶⁷ viz. WSAPL to carry out a detailed assessment of the environmental problems and infrastructure needs in Alandi, Shirdi and Shani-Shingnapur and prepare a technical project report in line with the guidelines of the ECO-City project being implemented by CPCB.

MPCB stated (September 2011) that in respect of Shirdi and Shani-Shingnapur, a concept plan had been prepared and handed over to the concerned District Collector and religious institution for implementation and in respect of Alandi, an MoU had been entered into on 19 April 2008 between the District Collector, Pune, the Alandi Municipal Council and MPCB for a total project cost of ₹ 2.8 crore and an amount of ₹ 10 lakh had been released by MPCB to the Collector, Pune. However, implementation of the project on environmental improvement of religious places was still to be initiated (October 2011). This reflected the apathy of the district administration towards improvement of the environmental quality around these important religious places.

2.2.14 National River Conservation Programme

The Krishna, Godavari and Tapi rivers had been selected for pollution abatement projects under the National River Conservation Programme (NRCP). The physical and financial progress of the projects are given in **Table 4:**

Table 4: Status of implementation of NRCP

River/city	Name of the project	Sanctioned cost (₹ crore)	Actual cost (₹ crore)	Sanctioned date of completion	Actual project end date	Reasons for delay in completion
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Krishna/ Karad	STP	0.55	0.86	June 2002	December 2006	Change in the type of work
	I&D ⁶⁸	2.64	2.28	June 2002	December 2006	Change in the type of work
Godavari/ Nashik	I&D	31.46	29.69	March 2003	July 2006	Abandonment of work by the contractor and completion by Nashik Municipal Corporation (NMC) by engaging another agency.
	STP 78 mld at Tapovan	20.82	20.90	March 2003	April 2004	Not available
	STP 22 mld at Chehdi	6.89	6.89	March 2003	June 2007	Land acquisition, change in design, increase in the span of rainy seasons etc.

⁶⁷ Wilbur Smith Associates Pvt. Ltd.

⁶⁸ Interception and Diversion is intercepting nallas and diverting them towards STP so that waste water gets treated before meeting any water body.

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Krishna/ Sangli	I&D	30.22	21.31	March 2007	Not completed	Litigation and stoppage of work due to opposition from villagers
	STP	4.49	3.3	August 2004	Not completed	No information
Godavari/ Nanded	STP	2.77	2.44	June 2005	Completed June 2006	Land litigation, rainy season, shifting of High Tension power line of M.S.E.B., obtaining approval of revised cost estimate (RCE) <i>etc.</i>
	I & D	9.94	9.92	June 2005	Commis- sioned - June 2006	Land litigation, heavy rainfall, delay in obtaining approval of Revised Cost Estimate <i>etc.</i>

Due to non-completion of the works at Sangli, untreated sewage water (around 27 MLD) was being discharged into the Krishna river. Though the work at Nasik was complete, 110-120 MLD of untreated sewage was being discharged into the Godavari river due to insufficient capacity of the STP. At Nanded, the work of I&D and the STP had been completed but not commissioned, and hence, the entire untreated sewage/waste water (60 MLD) was being directly discharged into the Godavari river.

In the exit conference the Secretary, Environment Department stated (September 2011) that the I&D work at Sangli was not completed due to opposition of villagers. However, the matter had now been sorted out and the work of realignment was in progress. While accepting the under-utilisation of the STP at Chehedi due to the inadequate sewage network, it was stated that the work of additional sewage network (upto the year 2041) had been taken up under JNNURM, which was still in progress. In respect of the Nanded Waghala City Municipal Corporation (NWCMC) it was stated that 87 MLD STP under JNNURM was under construction and after completion, the sewage generated would be treated and disposed off safely.

2.2.15 Water bodies in Maharashtra

An approximate 49 *per cent* of the area of four river basins *i.e.*, Krishna, Godavari, Tapi and Narmada, consisting of 43 *per cent* of the population of the area around these basins were considered by the Maharashtra Water Resources Regulatory Authority as deficit or highly deficit with regard to water availability. The sizes of these deficit areas was likely to increase steadily with the increasing population and economic growth in the years to come. There were 380 rivers in the State and their total length was 19,269 km. Further, there were 117 lakes in Maharashtra. The State had a 720 km long coastline along the Arabian Sea.

The Groundwater Survey and Development Agency⁶⁹ delineated 1531 watersheds in 33 districts based on the geomorphology of the State. The total rechargeable fresh groundwater resources in the State were computed as 35.79

⁶⁹ An agency under Water Supply and Sanitation Department, GoM responsible for groundwater survey and monitoring.

billion cubic metre (BCM) and the net groundwater availability was 33.91 BCM. The deficiencies noticed in the quality of river water, coastal water and lakes are discussed below.

2.2.15.1 Maintenance of minimum river water flow

A study was conducted (June 2005-May 2010) by engineers of the Hydrology Project Circle (Collection), Nashik under the Water Resources Department, for analysis of surface water quality. It revealed that the Krishna basin was most critical as the percentage of sodium at 27 locations out of 33 was beyond the limit. Further, the National Water Policy 2002 (Clause 14.3) enunciated that a minimum flow of water should be ensured in perennial streams based on ecological and social considerations. However, there were no norms/guidelines prescribed by it for maintaining minimum water flow in the rivers/streams in Maharashtra State.

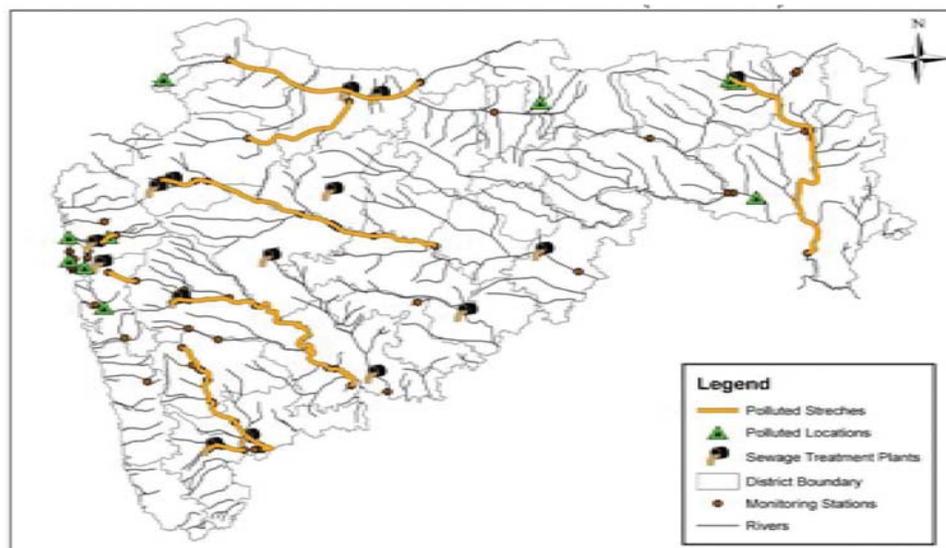
The Government stated (March 2011) that the issue of maintaining minimum flow of three TMC in Krishna river as per Krishna Water Disputes Tribunal order (December 2010) was being examined by the Technical Advisor appointed (February 2011) by the State Government. No such examination had been started in respect of the other rivers and streams.

2.2.15.2 Deteriorating water quality of rivers

Monitoring of water quality of rivers and lakes was taken up in the year 2000 by CPCB and MPCB. On the basis of results of analysis of data of seven years from 2000-06, 23 stretches (20 rivers and three creeks) were identified (July 2007) by the CPCB where the water quality did not fulfil the criteria of BOD. CPCB instructed (July 2007) MPCB to take immediate steps to prevent and control pollution in these identified stretches. CPCB further identified (October 2010⁷⁰) that the stretches of rivers not fulfilling the criteria had increased from 23 to 28 (**Appendix 2.2.3**). MPCB was directed by CPCB to inventorise all urban centers and industrial units discharging in the polluted stretches directly or through a tributary, streams and drains as it affects the public health and aquatic life. It was further instructed to take immediate steps to prevent and control pollution in the identified polluted stretches. It was however noticed that MPCB had not prepared any Action Plan for prevention and control of pollution as directed by CPCB. This was reflected by the deteriorating water quality of the rivers over a period of time.

Polluted river stretches had increased from 23 to 28 over the last few years

⁷⁰ vide DO Letter No. A-14011/1/2010-MON/83 dated 4 October 2010



Polluted river stretches in Maharashtra

The details of polluted river stretches in five (there are no polluted stretches in Navi Mumbai) out of the six test-checked ROs of MPCB are given in **Table 7**.

Table 7: Polluted river stretches in test-checked ROs

Sr. No.	Selected ROs	No. of polluted stretches	Rivers	Location of Stretch	No. of monitoring locations	Permissible limits of BOD	Actual BOD
1	Kalyan	3	Ulhas	Badlapur	1	3 mg/L or less	>6 mg/L
				Mohane	2		
			Kalu	Atale village	1		
2	Nashik	3	Godavari	Nasik Down stream to Paithan	12		
				Tapi	Madhya Pradesh border to Bhusaval		
3	Aurangabad	3	Girna		Malegaon to Jalgaon	2	
			4	Kolhapur	3	Krishna	Dhom dam to Kolhapur
Panchganga	Kolhapur	1					
5	Nagpur	4	Kanhan	Down stream Nagpur	3		
				Wainganga	Down stream Ashti	6	
				Wardha	Rajura village	3	
				Kolar	Kamptee	1	
Total		13			40		

MPCB stated (September 2011) that the list of polluted stretches was communicated by the Environment Department to the Urban Development Department for giving priority to taking up of environmental infrastructural projects like sewage treatment plants in these identified locations. The list had also been shared with the Department of Water Supply & Sanitation, so that the towns on the banks of these rivers could be taken up on priority for

sanitation programmes. In the exit conference the Secretary, Environment Department stated (September 2011) that increase in the number of polluted stretches was due to increase in domestic sewage discharged into the rivers and due to inclusion of the Mithi river in the survey.

Non-preparation of an Action Plan by MPCB for prevention and control of pollution resulted in the deterioration of water quality of rivers over a period of years.

2.2.15.3 Coastal water quality

On 7 August 2010 and 4 August 2011, Maharashtra had witnessed two major mishaps along the coastline, during which ships containing huge volumes of oil, hazardous waste *etc.* had collided causing major oil spills along the coastal areas of western Maharashtra. These incidents had adversely affected the coastal water quality and sea life along the coast. In a study conducted (February 2007 and February 2008) by the National Environmental Engineering Research Institute (NEERI) it was pointed out that untreated sewage from human population, effluents from industries and oil and grease spills had adversely affected the coastal waters at Thane Bassein and Mahim creek.

MPCB had engaged (2007-08) the National Institute of Oceanography (NIO), for conducting a study of the coastal marine and estuarine ecology of Maharashtra. NIO conducted a pre- monsoon study (February to May 2007) and a post- monsoon study (October 2007 to February 2008) and submitted its report (2008) to MPCB.

The study revealed that the water along the northern coast of the State was deteriorating due to reasons such as high level of BOD, influx from domestic and industrial effluents *etc.* The study also revealed the deteriorating water quality at Manori, Versova, Thane creek, Patalganga estuary *etc.* Accordingly, NIO recommended (December 2009) the monitoring of estuaries for bacterial counts, water quality (dissolved oxygen, BOD, nutrients *etc.*) and maintaining of a clean and healthy creek/estuary ecosystem along coastal Maharashtra. However, these recommendations had not been implemented by MPCB.

MPCB stated (July 2010) that these recommendations were circulated to the concerned offices and departments for developing action plans and taking corrective measures. However, it was found that no further action had been taken by MPCB.

Delay in implementing the recommendations of NIO would result in further deterioration of coastal water quality.

2.2.15.4 Inadequate monitoring of lake water quality

As per the “Uniform protocol for monitoring of water quality” prescribed by MoEF, the frequency of monitoring of lakes should be four times a year. Test check of records of six ROs revealed that MPCB had not monitored the water quality as detailed below:

- There were 21 lakes in the Navi Mumbai region. It was observed that the RO, Navi Mumbai had been monitoring the water quality of only three lakes (Belapur, Nerul and Airoli) once in a year.

Recommendations of NIO in relation to deteriorating coastal water quality were not implemented in the State

In the test-checked ROs, monitoring of lake water quality by MPCB was inadequate

- There were nine lakes⁷¹ in the jurisdiction of Kalyan-Dombivali Municipal Corporation (KDMC). The RO, Kalyan had not monitored the water quality of any of these lakes.
- Kolhapur region had seven lakes⁷². The RO, Kolhapur had been regularly monitoring the water quality in respect of Rankala lake only.

RO, Navi Mumbai stated (March 2011) that monitoring of all lakes could not be done due to manpower constraints. RO, Kalyan stated (March 2011) that since the lakes were not a drinking water source hence the same were not monitored. RO, Kolhapur stated (December 2010) that monitoring of other lakes was conducted only on receipt of complaints.

Due to non-monitoring of these lakes pollution identification and further planning, programming for pollution abatement was likely to have been affected.

2.2.16 Effects of water pollution

Shortfalls in effluent treatment in STPs, CETPs and ETPs in the State have been discussed in the above paragraphs. Poor treatment of effluents before finally discharging them into *nallahs* and rivers adversely affects public health in the State. Polluted water causes water-borne diseases. Incidence of such diseases and deaths due to these diseases increased in the State during the period from 2006-07 to 2010-11 as given in **Table 8**.

There was a substantial increase in the number of water-borne diseases in the State during 2006-11

Table 8: Incidence of diseases and deaths due to these diseases

Year	Gastroenteritis		Diarrhoea		Hepatitis		Typhoid		Total	
	Attacks	Deaths	Attacks	Deaths	Attacks	Deaths	Attacks	Deaths	Attacks	Deaths
2006-07	52844	58	221946	6	5202	0	33770	0	313762	64
2007-08	228118	202	1593175	14	17086	16	82134	0	1920513	232
2008-09	174436	62	1777396	6	9824	2	87822	0	2022778	70
2009-10	223007	106	1524936	25	8333	2	112275	14	1868551	147
2010-11	237502	75	1759108	19	8715	41	118243	0	2123568	135

Source: Information furnished by Public Health Department, Government of Maharashtra

As may be seen from the above table, the number of water-borne diseases increased from 3.14 lakh in 2006-07 to 21.24 lakh in 2010-11. This indicated the failure of the authorities in controlling water pollution.

2.2.17 Monitoring

2.2.17.1 Non-monitoring of Environmental Audit Reports of industries

As per Rule 14 of the Environment (Protection) Rules, 1986, every person carrying on an industry, operation or process requiring consent under Section

⁷¹ Adharwadi, Bhatale, Chole, Gauripada, Kalatalav, Rahatale, Sapad, Titwala and Umbarde

⁷² Jaisingrao lake, Kalamba lake, Laxmi lake, Rankala lake, Rajaram lake, Sarpirajirao lake and Vadgaon lake

25 of the Water (Prevention and Control of Pollution) Act, 1974 or under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 or both or Authorization under Hazardous Wastes (Management and Handling) Rules, 1989 issued under the Environment (Protection) Act, 1986 was to submit an Environmental Audit Report (EAR) for the financial years ending 31 March in Form V to the State Pollution Control Board (MPCB) on or before 30 September of every year beginning from 1993. All the industries were required to submit EARs as per the Rule.

The total number of industries, category-wise, as per the Annual Report for the year 2009-10 in respect of the test-checked ROs' offices is detailed in **Table 9**.

Table 9: Category-wise details of industries in test-checked ROs

Category	Number of industries					
	Aurangabad	Nashik	Navi Mumbai	Kalyan	Kolhapur	Nagpur
Red ⁷³	938	2708	917	1392	1575	1074
Orange ⁷⁴	2041	2630	486	410	1617	2294
Green ⁷⁵	4952	9980	1477	1874	1174	3616
Total	7931	15318	2880	3676	4366	6984

Audit scrutiny of the test-checked ROs revealed that all the industries had not submitted their EARs as required under rules.

In reply, the ROs of Nashik, Kalyan, Navi-Mumbai and Aurangabad stated (March-April 2011) that Red category industries of large and medium scale were submitting their EARs. RO, Nagpur stated (April 2011) that during 2010-11, only 50 industries had submitted EARs and RO, Kolhapur replied (March 2011) that industries were submitting their EARs directly to the MPCB office online. MPCB stated (September 2011) that it had issued (April 2011) a circular to all ROs to ensure submission of EARs by all industries and also stated that as on 15 September 2011, only 85 out of 72762 industries had submitted online EARs. In the absence of EARs, MPCB would not be able to correctly assess the pollution load of industries, adequacy of the treatment facilities and compliance of the consent conditions.

2.2.17.2 Non-adherence to sampling norms

MPCB prescribed (May 1999) that each field officer under the charge of RO should collect 13 samples of air emissions and seven environmental samples per month for analysis in the Regional laboratories. He was to also collect 20 samples in the presence of industrial representatives for checking.

Scrutiny of statistical reports of the test-checked ROs for the quarter ending December 2010 revealed that there were shortfalls ranging from 16.83 to 52.51 per cent⁷⁶ in collection of the samples.

MPCB had not adhered to its own sampling norms

⁷³ Highly polluting industries

⁷⁴ Moderately polluting industries

⁷⁵ Least polluting industries

⁷⁶ RO, Aurangabad – 49.36, RO, Kalyan – 33.96, RO, Kolhapur – 19.09, RO, Nagpur – 16.83, RO, Nasik – 52.51 and RO, Navi Mumbai – 31.89.

Due to inadequate collection and analysis of samples from industries, MPCB and the industries would be deprived of the knowledge regarding the composition and quantity of pollutants and therefore, would not be able to take effective remedial action.

In the exit conference the Water Pollution Abatement Engineer (WPAE), MPCB stated (September 2011) that as of now, 107 posts of field officers had been filled up and henceforth, there would not be any shortfalls in sample collection.

2.2.17.3 Integrated Management Information System (IMIS)

Implementation of IMIS

MPCB decided (March 2007) to develop, an Integrated Management Information System (IMIS), which included development of an enterprise solution of MPCB's multi-disciplinary functions through 10 modules⁷⁷. The work was expected to be completed by December 2008. However, it was observed that IMIS was commissioned (April 2010) in all Regional offices but was still to be implemented in 15 stand-alone sub-regional offices (SROs)⁷⁸ (May 2011).

Laboratory Information Management System

The main feature of the system was to integrate laboratory functions, such as receipt and testing of various types (waste water, industrial effluents, hazardous wastes *etc.*) of samples and providing results of analysis online to all the offices of MPCB. It was initially rolled out at the Central Laboratory at Mhape, Navi Mumbai, and Regional Laboratories at Aurangabad and Pune. MPCB rolled out (January 2010) Laboratory Information Management System (LIMS) modules⁷⁹ at other locations⁸⁰. Scrutiny (May 2011) revealed that:

IMIS introduced by MPCB to systemise laboratory management activities did not yield the desired results

- i. At a time, only 10 users could log in and use the software and access was denied to other users unless at least one of the earlier users logged out. Therefore, there were substantial delays in testing samples collected by MPCB to assess pollution levels. Thus the objective of collecting the samples by MPCB could not be achieved. MPCB stated (May 2011) that the requirement of LIMS was being reviewed.
- ii. It was seen that as of May 2011, the LIMS module was being used only for watching the receipt of consent applications from the industry. Digitization of industries was not completed by all the RO offices and only the Red category and Orange category industries had been entered into the system. Further the master register maintained manually by

⁷⁷ File tracking system, Complaint Management, Consent Management, Authorisation Management, Waste Management, Cess Management, Human Resources, Asset and Stores, Legal and Laboratory Information Management System

⁷⁸ SRO Tarapur, SRO Taloja, SRO Mahad, SRO Satara, SRO Solapur, SRO Jalgaon, SRO Ahmednagar, SRO Latur, SRO Parbhani, SRO Nanded, SRO Bhandara, SRO Akola, SRO Sangli, SRO Ratnagiri and SRO Chiplun.

⁷⁹ A web-based technology available to ROs and laboratory on Virtual Private Network

⁸⁰ Aurangabad (Nanded, Parbhani and Latur), Kalyan, Navi Mumbai, Raigad; RO, Mumbai, Pune (including Solapur and Satara) and Thane.

ROs' was also not updated. As a result, MPCB could not take any action against the industries, which did not renew their consents in time. Though LIMS was implemented in January 2010, the delay in issue of consent applications was still persisting (May 2011). MPCB stated that the project was expected to be rolled out by December 2011.

Thus, the objectives envisaged by the Board were not achieved. MPCB stated (May 2011) that Green category industries were being digitized.

In the exit conference the Secretary, Environment Department stated (September 2011) that this issue has now been sorted out and would be implemented in the second phase.

2.2.17.4 Board meetings

Section 8 of the Water Act required that MPCB should meet at least once in three months to discuss the status of implementation of various rules, regulations and other administrative purposes. The members of the Board comprised Secretaries from the Environment, Urban Development, Industries, Water Supply and Sanitation and Public Health departments, the CEO of Maharashtra Industrial Development Corporation *etc.*

It was observed that only eight meetings were held during 2005-06 to 2009-10 as against 20 meetings required to be held. In seven out of the eight meetings held, the required quorum was not met as a result of which representation from all the concerned departments were not ensured.

MPCB stated (March 2010) that the required number of meetings were not held as the Board had not been fully constituted in 2005-06. Other reasons included the election, code of conduct, deputation of the Member Secretary for election duty and transfers of Member Secretaries.

Shortage in Board meetings held indicated laxity on the part of MPCB to monitor implementation of various rules and regulations

2.2.18 Conclusion

Maharashtra Pollution Control Board had not formulated any framework to identify the sources contributing to water pollution in the State. There were substantial delays at its level in finalization of applications received for grant or renewal of consents. In the jurisdiction of the test-checked regional offices, a majority of urban local bodies were found to be discharging domestic effluents into water bodies without treatment. Existing Common Effluent Treatment Plants and Effluent Treatment Plants were found to be inadequate to treat industrial effluents. Consented standards in respect of treated effluents were also not maintained by the Common Effluent Treatment Plants and Effluent Treatment Plants. Though polluted river stretches in the State had increased from 23 to 28 during the last eight years, Maharashtra Pollution Control Board had not taken any action to prevent further deterioration. Assessment of lake water quality by Maharashtra Pollution Control Board was found to be inadequate. Increase in water-borne diseases in the State during 2006-11 substantiated the diminishing standards in potable water. Maharashtra Pollution Control Board had not adhered to its own norms prescribed for

collection of samples from industries to monitor pollution levels. The Integrated Management Information System introduced by Maharashtra Pollution Control Board with a view to systematize pollution control functions did not yield the desired results. The deficiencies in the implementation of Acts and Rules for water pollution control had not only affected the health of human beings but also the environment.

2.2.19 Recommendations

- The Government may ensure that applications received from local bodies and industries for grant and renewal of consents are dealt with within the prescribed time limit, through a specific monitoring mechanism for this purpose.
- The Government may fix minimum flow of water in each river and strictly implement it for ecological conservation of aquatic flora and fauna.
- Maharashtra Pollution Control Board may chalk out a time-bound Action Plan to implement the recommendations of the Central Pollution Control Board in relation to the increasing number of polluted river stretches.
- Maharashtra Pollution Control Board may strictly follow the uniform protocol for monitoring of water quality prescribed by Ministry of Environment and Forests.
- Maharashtra Pollution Control Board may strictly adhere to its sample collection and testing norms to ensure that pollution levels are within the limits.

The matter was referred to the Government (August 2011). Reply had not been received (October 2011).

Rural Development and Water Conservation Department

2.4 Implementation of Soil and Water Conservation Programmes

Highlights

Performance audit of the 'Implementation of Soil and Water Conservation Programmes' was conducted to assess the status and impact of implementation of selected soil and water conservation schemes. Audit scrutiny revealed that comprehensive integrated planning was not done, watershed projects were implemented with inadequate project plans, farm ponds were not serving the intended purpose of percolation of water, farmers' suicides continued, soil and water conservation works were not executed in the prescribed sequence by adopting the ridge to valley strategy, watershed treatment works were taken up in command areas of irrigation projects, the targets set were not achieved due to financial constraints, there was shortfall in works taken up and completed and there was decrease in Static Water Level in 20 talukas of three districts.

Percentage of funds released at the fag end of the year in the month of March ranged between 34 and 100 and funds of ₹ 5.65 crore were diverted to other scheme.

(Paragraphs 2.4.7.2)

Farm ponds were constructed without providing inlets and outlets and without carrying out stone pitching works to prevent soil erosion.

(Paragraph 2.4.8.1)

The Vidarbha Watershed Development Mission did not achieve the basic objective of controlling the suicide cases of farmers despite expenditure of ₹ 16.44 crore.

(Paragraph 2.4.8.5)

The ridge to valley strategy was not adopted and more thrust was given to the works in lower reaches, neglecting the execution of works in the upper/middle reaches of watersheds. The soil and water conservation works were undertaken in command areas of irrigation projects.

(Paragraph 2.4.8.7)

2.4.1 Introduction

The State of Maharashtra comprises an area of 307.58 lakh hectares (ha), of which 159 lakh ha is drought-prone, due to scanty rains and leasing out of moisture content from the soil surface. The deficiency of water and soil erosion is caused by highly erosive rains, high wind velocity and generally shallow soil. Consequently, soil becomes infertile for agriculture. In order to tackle these problems, the Government of Maharashtra launched 14 schemes/programmes (**Appendix 2.4.1**), from 1992 onwards to conserve soil and rain water in order to increase the productivity of agriculture and to boost the agrarian economy.

Out of 44,184 watersheds⁹⁶, the Government proposed (1992) to take up soil and water conservation (SWC) programmes in 33,467 watersheds through watershed management implemented by the Agriculture Department in co-ordination with the Water Conservation Department. Out of 33,467 watersheds, works were undertaken in 26,897 watersheds. However, only 10,887 watersheds could be completed (March 2011).

Soil and water conservation programmes consist of treatments such as Continuous Contour Trenches (CCT), Compartment Bunding (CB), Loose Boulder Structure (LBS), Mati Nalla Bandh (MNB), Cement Nalla Bandh (CNB), farm ponds *etc.* The area suitable for soil and water conservation works was spread over 241 lakh ha. The conservation programmes have been undertaken in 26,897 watersheds covering 111.24 lakh ha under 14 schemes⁹⁷. The balance area of 129.76 lakh ha has not yet been covered. The deficiencies noticed in the implementation of the programmes are discussed in the succeeding paragraphs.

2.4.2 Organizational set-up

The Rural Development and Water Conservation Department (RD & WCD) undertakes soil and water conservation works which are implemented by Agriculture Department⁹⁸. The Secretary, WCD is the head of the department. The Director, Soil Conservation and Watershed Management, Pune (Director) in the office of the Commissioner of Agriculture (COA), Pune is in charge of implementing the soil conservation works and is assisted by eight Divisional Joint Directors (JDs) of Agriculture, 33 District Superintending Agriculture Officers (DSAOs), 90 Sub-Divisional Agriculture Officers (SDAOs) and 353 Taluka Agriculture Officers (TAOs) in the entire State. The organizational chart is given in **Appendix 2.4.2**.

2.4.3 Scope and methodology of audit

Performance audit of the 'Implementation of Soil and Water Conservation Programmes' was conducted between February and July 2011, covering the period from 2006-07 to 2010-11 by collection of information through audit queries/questionnaire and test check of records in the Rural Development and Water Conservation Department Secretariat and the Directorate of Soil Conservation and Watershed Management as well as the records of four Joint Directors of Agriculture (JDsA), nine District Superintending Agriculture Officers (DSAOs), nine Sub-Divisional Agriculture Officers (SDAOs), 39 Taluka Agriculture Officers (TAOs) and Circle Agriculture Officers (CAOs). The DSAOs and Taluka Agriculture Officers were selected (**Appendix 2.4.3**) by adopting the simple random sampling without replacement method using Idea software.

Descriptions of the six schemes selected for test check out of the 14 conservation schemes are given in **Appendix 2.4.4**. The audit objectives, audit

⁹⁶ A catchment of rain basin which falls between a ridge line and a drainage point through which all the rain water falling in that area drains out. It is categorized as Mega (above 15,000 ha), Mini (3,000-5,000 ha) and Micro (500-600 ha)

⁹⁷ Centrally sponsored and six State sponsored

⁹⁸ The Agriculture Department is an implementing agency and funds are provided by RD&WCD.

criteria, scope and methodology of audit were discussed in an entry conference held on 6 June 2011 with the Principal Secretary, Water Conservation Department. An exit conference was held on 18 October 2011 with the Principal Secretary, Water Conservation Department who accepted all the recommendations. The responses of the Government during the exit conference have been included at appropriate places.

Out of the six schemes selected for performance audit, the National Agriculture Development Programme (NADP), the River Valley Project (RVP) and the National Watershed Development Programme (NWDP) are Centrally sponsored and the Marathwada Watershed Development Mission (MWDM), the Vidarbha Watershed Development Mission (VWDM) and the Accelerated Watershed Development Programme (AWDP) are State sponsored.

2.4.4 Audit objectives

The audit objectives were to assess whether:

- the planning process for the implementation of programmes was efficient;
- the financial management was efficient and effective;
- the implementation of the programme was efficient, effective and economical;
- effective monitoring and internal control mechanisms were in place.

2.4.5 Audit criteria

The audit criteria adopted for the performance audit were:

- Manual of the Soil and Water Conservation Department;
- Programme guidelines, instructions, orders, circulars, issued by Government of India (GOI) and Government of Maharashtra (GOM) from time to time and
- Plans of soil and water conservation works and records pertaining to their implementation.

Audit Findings

2.4.6 Planning

All schemes (Centrally as well as State sponsored) are planned by the RD & WCD in consultation with the Agriculture Department. The Taluka Agriculture Officers prepare the plan for development of micro-watersheds and submit the same to the District Level Committee⁹⁹ (DLC) for sanction. The DLC accords sanctions and submits demands to the Government for funds. It was noticed that no comprehensive integrated planning comprising all the schemes under implementation and entire area of the State was being done by the department.

⁹⁹ A district level watershed committee headed by the District Collector for sanctioning taluka level watershed project plans

2.4.7 Financial Management

2.4.7.1 Funding pattern

During each financial year, budget proposals for all the schemes are sent to the RD&WCD by the Director for scrutiny. The Finance Department finalizes the budget allocations and passes it on to the Commissioner of Agriculture, Pune (COA). The Government of Maharashtra has constituted online budget distribution system for allocation of funds. In this system, grants are allocated month wise.

2.4.7.2 Budget and expenditure

The expenditure incurred on the six schemes of soil and water conservation selected for audit was ₹ 1,342.48 crore (during 2006-11). The details are given in **Appendix 2.4.5**. It was seen that despite having sufficient funds, the expenditure was very little under the National Agriculture Development Programme in 2010-11, RVP in 2006-07 and 2009-10, MWDM in 2006-07, 2007-08 and 2008-09 and VWDM in 2007-08 and 2009-10 with the result that there was a shortfall in achievement of targets as discussed in the succeeding paragraphs.

(i) Release of funds at the fag end of the year

Rule 56 (3) of the General Financial Rules, stipulates that rush of expenditure, particularly in the closing months of the financial year should be regarded as a breach of financial propriety and should be avoided.

Scrutiny (May 2011) of the records of the Director revealed that the release of funds under selected schemes for the State was maximum in the month of March as shown in **Appendix 2.4.6**. The percentage of funds released at the fag end of the year in the month of March under the selected programmes during 2006-11 ranged between 34 and 100.

Test check of records revealed that out of the total grants of ₹ 324.62 lakh and ₹ 230.26 lakh released under AWDP to the Amravati and Nashik districts, grants of ₹ 219.42 lakh (58 *per cent*) and ₹ 81.02 lakh (35 *per cent*) respectively were released in the month of March. Similarly, out of the total grants of ₹ 54.61 lakh and ₹ 114.57 lakh released under NWDP in the same districts, during 2006-11, grants of ₹ 13.02 lakh (24 *per cent*) and ₹ 44.66 lakh (39 *per cent*) respectively were released in the month of March.

The Government accepted (October 2011) that funds were released at the fag end of the year.

(ii) Diversion of scheme funds

Rule 26 (ii) of the General Financial Rules states that the duty of a Controlling Officer is to ensure that expenditure is incurred for the purposes for which funds have been provided.

It was observed that in two out of the nine selected DSAOs, the grants meant for NADP works were diverted as detailed below.

Release of funds under selected schemes was maximum in the month of March

GOI funds for the scheme under NADP were diverted to MGNREGS

- The total target for farm ponds under NADP during the year 2009-10 for Buldhana district was 2,300 against which only 188 farm ponds were completed as of January 2011 leaving a balance of 2,112. It was further observed that the GOI funds for the scheme under NADP to the extent of ₹ 3.78 crore were diverted (January 2011) to the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), at a stage when the farm ponds of NADP were still incomplete.

The DSAO, Buldhana stated (May 2011) that the DLC had permitted the diversion of funds.

- Similarly, NADP funds to the extent of ₹ 1.87 crore were diverted by the DSAO, Nashik for payment of 287 farm ponds taken up under MGNREGS. Payment for works sanctioned under MGNREGS, from the funds allotted for NADP, was irregular.

The DSAO, Nashik stated (June 2011) that since the physical target to be achieved under MGNREGS was more and the beneficiaries were deprived of the grants due to them, the funds were diverted with the orders of the JDA, Nashik.

The replies are not acceptable as diversion of NADP funds for achievement of MGNREGS targets is not justified, especially when there was a shortfall in achievement of NADP targets.

(iii) No guidelines for treatment of accrued interest

Funds allotted for watershed works are provided to watershed committees (WCs) for execution of works at the village level. These funds are kept in the saving bank accounts of WCs. However, there were no specific instructions in the guidelines about the manner of utilization of the interest earned.

The Government stated (October 2011) that the competent authority had been requested to issue guidelines in this regard.

(iv) Diversion of funds earmarked for training

Funds earmarked for training was unutilized defeating the purpose of training

According to NWDP guidelines, short duration orientation courses should be arranged for honorary office bearers of the registered societies established under the project at the micro-watershed level for creation of awareness of SWC schemes amongst farmers.

An amount of ₹ 4.76 lakh was released (June 2008) to the Taluka Agriculture Officer, Sangamner for training of Watershed Development Team (WDT) members in respect of nine watersheds. However, only ₹ 56 thousand was utilized for training and the remaining amount was diverted for SWC works without prior approval of the higher authorities. This resulted in defeating the objective of creation of awareness of SWC schemes amongst farmers, which was an essential component of the scheme for its successful implementation.

The Taluka Agriculture Officer, Sangamner stated (July 2011) that the amount meant for training which was utilized for other purposes would be proposed for ex-post facto sanction. The reply is not acceptable as diversion of funds meant for training was irregular.

(v) Incorrect reporting of expenditure

In the Taluka Agriculture Office, Anjangaon Surji, it was observed that expenditure of ₹ 2.99 crore on VWDM works reported to the Government was inclusive of ₹ 23.46 lakh (including interest of ₹ 6.30 lakh) lying unspent in the bank accounts.

The TAO stated (June 2011) that funds of ₹ 14.56 lakh were received (May 2010) for study tours of farmers of the watershed at the taluka level. However, no detailed plan of the study tour had been received from the watershed committees and as such, the amount could not be spent.

The reply is not acceptable as depiction of unspent amounts as expenditure was incorrect

2.4.8 Programme implementation

2.4.8.1 National Agriculture Development Programme (NADP)

• Limited use of farm ponds as storage tanks

Farm ponds are constructed with the objectives of increasing groundwater table, increasing the storage of rain water, improving recharge of wells and providing protective irrigation. The ponds are constructed by the beneficiaries from their own resources and after due inspection by the authorities, subsidy is paid. Against the target of 79,000 farm ponds to be constructed under NADP during 2007-11, 62,018 farm ponds were constructed to store rain water for recharging ground water as well as life saving irrigation to crops.

It was observed that out of 39 selected TAOs, in two test-checked TAOs (Miraj and Sangamner), the farmers/beneficiaries were using the farm ponds as storage tanks by lining the pond with plastic covers to prevent percolation, thereby defeating the objectives of recharging of wells and increase in the water table.

The TAO, Miraj stated (June 2011) that payments for works done were made after due inspection of the sites and ensuring fulfillment of technical requirements and the plastic covers were used by the farmers afterwards.

The reply is not acceptable as the use of plastic covers in farm ponds should have been stopped as soon as it was noticed.

The TAO, Sangamner stated (June 2011) that the department had permitted (August, 2010) the use of plastic and also stated that even if the farm pond was covered with plastic, it would not affect the storage of rain water and protective irrigation.

The reply is not acceptable as the Government order (August 2010) did not permit use of plastic covers.

• No inlet and outlet provided in farm ponds

According to technical specifications given in the NADP guidelines, a farm pond should have an inlet and an outlet and there should be pitching (stone work) inside the farm pond. The height of the inlet to the farm pond should not be more than the ground level in watershed area. Scrutiny of records in audit and interviews and interaction with the beneficiaries revealed that the farm ponds were constructed without the above specifications.

Plastic covers were used against the guidelines, defeating the objective of percolating rain water

Farm ponds were constructed without stone pitching work and inlets and outlets

Out of 39 selected TAOs, in four test-checked TAOs, the technical guidelines of NADP were not observed. The cases are given in **Appendix 2.4.7**. Further, SDAO, Malegaon (TAO, Nandgaon) and TAO, Devla made a payment of subsidy of ₹ 82,000 each, for the works not executed as per the technical specifications, which was irregular.

Plantation or pitching was not provided during construction of farm ponds

- **Non-prevention of siltation and soil erosion**

The scheme guidelines of NADP provide for planting some vegetative grasses near the inlet and outlet where flow of water was more. It was mandatory for the beneficiaries to do it from their own budget. The technical specification also provided for pitching to avoid soil erosion and depositing of silt.

Out of 37 TAOs, it was found that plantation or pitching were not provided by the farmers under TAO, Shrirampur and there was no record with the TAO, Dharmabad to show such plantations by the farmers.

The audit observations were accepted by the Government (October 2011).

Beneficiaries preferred farm ponds of bigger size despite small land holdings

- **Non-consideration of norms for determining size of Farm Ponds**

According to guidelines, the minimum holding for a farmer to be eligible as a beneficiary was 0.60 ha and there was no provision for payment of subsidy as per their land holdings. The scheme guidelines provided for farm ponds of different sizes and the subsidy to be paid was based on their sizes. The details are given in **Table 1**.

Table 1: - Sizes of farm ponds and admissible subsidy

Sr. No.	Size of farm pond (Meters)	Admissible subsidy (₹)
1	15x15x3	16,515
2	20x15x3	23,260
3	20x20x3	32,810
4	25x20x3	42,360
5	25x25x3	54,715
6	30x25x3	67,075
7	30x30x3	82,240

During the audit of 39 TAOs, it was observed that NADP has been implemented in 37 TAOs. Audit scrutiny revealed that

- In TAO, Jath, the beneficiaries preferred farm ponds of bigger size despite small land holdings. As per the list of the beneficiaries, 42 farmers whose land holdings were between 0.60 and 1.5 ha, had opted for the biggest sizes of the farm ponds for which subsidy admissible per farm pond was ₹ 82,240.
- In TAO, Dharmabad, in 94 (78 per cent) out of 121 cases, the sizes of farm ponds selected by the beneficiaries were the biggest ones and Government paid subsidy of ₹ 98.11 lakh for 121 farm ponds according to the sizes of farm ponds.

Government stated (October 2011) that out of the prescribed seven sizes of farm ponds, the farmers had their own choice to select any size.

The reply is not acceptable as allowing the biggest size of farm pond to beneficiaries having small land holdings would decrease the area under cultivation, deny benefits to a larger number of farmers and would also result in decrease in yield.

- **Shortfalls in works taken up and completed**

The farm pond programme under NADP was being implemented since 2007-08. The physical target of 200 farm ponds per taluka was set during 2007-08 and later, targets were fixed on the basis of grant received from GOI.

The beneficiaries are selected by a committee headed by the District Collector and work orders are issued to the beneficiaries. The payments are made to the beneficiaries after completing farm ponds as per specifications. The year-wise information is shown in **Table 2**.

Table 2: Status of NADP

Item	2007-08	2008-09	2009-10*	2010-11	Total
Number of programme implementing districts	16	21	25		25
Selected beneficiaries	17,500	47,037	40,703		1,05,240
Physical targets of farm ponds (Numbers)	17,500	21,500	40,000		79,000
Achievement (Numbers)	17,500	21,620	22,898		62,018
Shortfall (Numbers)	0	+120	-17,102		-16,982
Budget provision (₹ in crore)	80.00	136.52	224.00		440.52
Expenditure upto 31 March 2011 (₹ in crore)	80.00	136.48	202.07		418.55
Unutilised Fund (₹ in crore)	0	00.04	21.93		21.97

(*Programme was ongoing)

Thus, there was a shortfall of 16,982 farm ponds despite the availability of sufficient funds (₹ 21.97 crore).

Government stated (October 2011) that due to late receipt of funds from GOI, the works could not be completed within time.

The reply is not acceptable as the Government should have ensured timely availability of funds for the completion of the farm ponds.

2.4.8.2 River Valley Project (RVP)

- **Deficiencies in preparation of project report**

A watershed project, covering Shegaon and Banali villages, was taken up by the Taluka Agriculture Officer, Jath under RVP for a period of eight years from 2003-04 to 2010-11 at a cost of ₹ 2.28 crore. The major components of the project were demarcation, contour vegetative hedges supported by contour bunds, agro-forestry, horticulture development, pasture development and drainage line treatment in the upper, middle and lower reaches. The total expenditure incurred on the project upto March 2011 was ₹ 3.97 crore. The project was to be completed by 2010-11. However, it was not completed due to slow progress of a few components of project works as detailed in **Table 3**.

Inadequate planning led to either delays in completion or revision of projects

Table 3: Execution of work without proper planning (as of 31 March 2011)

Component	Target		Achievement		Shortfall in percentage	
	Physical (Number)	Financial (₹ in lakh)	Physical (Number)	Financial (₹ in lakh)	Physical	Financial
Earthen loose boulder structure	1,382	55.94	85	2.41	94	96
Agro-forestry	831	8.31	416	4.16	50	50
Contour trench	935	12.90	125	1.47	87	89
Sowing and planting	625	15.43	0	0	100	100
Drainage line treatment, upper reaches	331	5.96	15	0.24	95	95
Check bunds	77	6.75	6	0.79	71	88
Total	4,181	105.29	647	9.07	85	91

The Taluka Agriculture Officer, Jath stated (June 2011) that during the year 2002-03, when project was sanctioned, the activities of the upper and middle reaches were cancelled due to non-availability of required boulders in the nearby areas for Loose Boulder Structures (LBS) works. The agro-forestry, sowing and planting, pasture development and vegetative hedges works were cancelled due to uncertain and erratic rainfall.

The reply of Taluka Agriculture Officer indicated lack of adequate survey and investigation before preparation of the project report. The availability of boulders was not ensured prior to taking up of the works.

- **Non-installation of sediment monitoring stations**

With a view to measuring the hydrological and sediment response of the watershed for a period of seven years, selection of at least one out of five watersheds for establishment of sediment monitoring stations (SMS) was mandatory as per RVP guidelines.

Out of the 39 test-checked TAOs, RVP was under implementation in five. In four TAOs, it was observed that sediment monitoring stations were not installed/ working as detailed in **Table 4**.

Table 4: Installation of SMS

(₹ in crore)

Name of District/ Taluka	Year of commencement	Cost of SMS component under project	Present status
Ahmednagar	2002-03 2009-10	0.16 0.40	Not installed
Nanded/Naigaon	2000-01	0.03	Installed but washed away
Sangli/Kadegaon	2002-03	0.05	Not installed
Sangli/ Jath	2010-11	0.53	Not installed
Total		1.17	

Thus, due to non-installation of SMS, hydrologic and sediment response of the watersheds could not be measured. While accepting the point, Government stated (October 2011) that SMS would be installed as per norms.

Cash payments to contractors and pieceworkers were made in violation of Government rules

• **Payment to contractors and pieceworkers in cash**

According to Rule 355 (2) of the Maharashtra Treasury Rules (MTR), payments should be made to contractors/suppliers through cheques.

Out of the 39 test-checked TAOs, it was observed that in TAO, Kadegaon, a total amount of ₹ 55.82 lakh was paid in cash during 2006-08 to various Circle Agriculture Officers (CAOs) in violation of Government rules. Subsequently, the CAOs also made cash payment to the contractors and pieceworkers which was irregular and fraught with the risk of fraudulent payments.

Government stated (October 2011) that cash payments were made as the bank network was very scattered in the area. The reply is not acceptable as the TAOs and CAOs should have been asked to open bank accounts at their nearest bank branches.

• **Shortfall in watershed works taken up and completed**

Out of 1,235 priority watersheds, 271 watershed works were sanctioned (1993-2011) and only 173 were completed in five catchments leaving 98 watersheds incomplete and on-going as shown in **Table 5**.

Table 5: Status of RVP

Names of catchments/ areas	Names of districts implementing the project	Total No. of priority watersheds	Sanctioned watersheds	Completed watersheds	Incomplete watersheds
Damanganga	Thane, Nashik	110	47	21	26
Ukai	Dhule, Jalgaon, Nandurbar	174	27	27	0
Sardarsarovar	Nandurbar	54	26	26	0
Nagarjunsagar	Pune, Sholapur, Osmanabad, Satara, Sangli, Kolhapur, Ahmednagar	434	88	49	39
Pochampad	Nanded, Aurangabad, Nashik, Jalna, Beed	463	83	50	33
Total		1,235	271	173	98

Out of 98 incomplete watersheds, 58 were on-going even after completion of stipulated period of five years.

Government stated (October 2011) that due to late receipt of funds from GOI, the works could not be completed within time.

2.4.8.3 National Watershed Development Programme (NWDP)

- **Slow progress due to inadequate provision of funds**

According to the guidelines of NWDP, funds should be released in a phased manner for watershed projects over a period of five years from 2007-08 to 2011-12.

Inadequate funds provided for the projects resulted in slow progress of works

In TAOs at Morshi, Warud and Anjangaon Surji in Amaravati district and Malegaon and Dindori in Nashik district, it was observed that for 13 selected watersheds estimated to cost ₹ 9.68 crore, funds of ₹ 1.10 crore only were provided by the GOI and expenditure of ₹ 69.39 lakh was incurred (up to March 2011) as shown in **Appendix 2.4.8**. Funds to the extent of two *per cent* to 53 *per cent* were provided and expenditure to the extent of two *per cent* to 37 *per cent* was incurred at the end of the fourth year of implementation. It had been expected that funds to the extent of 80 *per cent* of the cost of the project would be provided and that 80 *per cent* works would be completed as envisaged in the project plans. It was noticed that inadequate funds provided by GOI for all the projects resulted in very slow progress of works. Besides, the TAOs also could not utilize the funds to full extent and the balance funds were kept in the banks.

On this being pointed out, the Government accepted the facts (October 2011).

- **Unfruitful expenditure on the management and preparatory phase**

The expenditure incurred on management and preparatory activities was rendered unfruitful due to passage of time

Scrutiny of project reports and the Quarterly Progress Report of 15 watershed projects costing ₹ 8.63 crore, planned under NWDP, revealed that all the projects were proposed to be executed in different villages of Ahmadpur and Nilanga talukas. As per the project report, these works were selected and taken up in 2007-08 under the XIth Five Year Plan for completion by 2011-12. Since its inception, ₹ 74.74 lakh was released up to March 2009 against which ₹ 74.72 lakh was spent on management and preparatory activities¹⁰⁰. Thereafter, no funds were released till March 2011. Thus, due to non-release of funds during 2009-11, the projects remained incomplete. The DSAO, Latur stated (July 2011), that the work would be covered from NADP and other funds.

However, the fact remains that the expenditure incurred on management and preparatory activities was rendered unfruitful due to passage of time.

- **Non-utilization of people's participation fund**

Funds allotted to encourage people's participation remained unutilized

The NWDP guidelines stipulate that funds should be earmarked in each project for people's participation to create awareness among farmers about the schemes. In TAO, Sangamner, it was noticed that funds of ₹ 1.09 crore against the total release of ₹ 1.22 crore during 2007-11 for people's participation remained unutilized. The TAO, Sangamner stated (July 2011) that proposals under NWDP were not cleared by the higher authorities.

Thus, funds allotted to encourage people's participation remained unutilized without any justifiable reasons. This would have led to lack of awareness among farmers about the schemes.

¹⁰⁰ Entry point activity, institution and capacity building, training cost, adoption of proven/new technology and preparation of detailed project report.

- **Shortfall in works taken up and completed**

In the XIth Five Year Plan (2007-12), it was decided to cover 1.81 lakh hectare of land under conservation works with a projected cost of ₹ 210 crore. As of March 2011, only 40 thousand hectare had been covered at a cost of ₹ 40.62 crore, leaving 1.41 lakh hectare uncovered

Government stated (October 2011) that due to late receipt of funds from GOI, the works could not be completed within time.

- **Impact of NWDP**

As per the evaluation report on watersheds of NWDP prepared by the Agricultural Finance Corporation, in September, 2008, the entry point activity had been executed in each watershed and efforts had been made for formation of Self Help Groups, User Groups and establishment of watershed association as well as Watershed Committees. However, these community organizations were found to be weak in executing their day-to-day activities. After September 2008, no impact assessment was done by the Government or Government approved agency.

Government stated (October 2011) that the final assessment report would be furnished, which was awaited (November 2011).

2.4.8.4 Marathwada Watershed Development Mission (MWDM)

- **Non-utilization of scheme funds earmarked for people's participation**

The MWDM guidelines stipulate that funds should be earmarked in each project for people's participation to create awareness among farmers about the schemes. During the test check of two talukas (Kinwat and Latur), it was noticed that funds of ₹ 60 lakh against the total release of ₹ 66 lakh during 2005-10 for people's participation remained unutilized. On this being pointed out by audit, no specific reason was offered by the TAOs, Kinwat and Latur.

- **Shortfall in works taken up and completed**

Eight Mega watersheds were chosen for eight¹⁰¹ districts and the geographical area of the watershed to be covered was 1,82,480 ha in 218 villages. Under these watersheds, 285 Mini watersheds had been created and 1,77,944 ha was covered, by spending ₹ 131.43 crore (up to March 2011) leaving 4,536 ha uncovered as shown in **Appendix 2.4.9**.

Government stated (October 2011) that the shortfall was due to non-availability of funds as per demand. However, details of funds demanded and dates of receipt were awaited (November 2011).

2.4.8.5 Vidarbha Watershed Development Mission (VWDM)

- **Non-improvement of water availability**

One of the objectives of the Vidarbha Watershed Development Mission (VWDM) was to increase productivity through improvement in water availability in order to control cases of farmers' suicides in Vidarbha region due to crop failure.

VWDM did not achieve the basic objective of controlling the suicide cases of farmers

¹⁰¹ Aurangabad, Beed, Hingoli, Jalna, Latur, Nanded, Osmanabad and Parbhani

Scrutiny in audit revealed that VWDM did not achieve the basic objective of controlling the suicide cases of farmers despite expenditure of ₹ 16.44 crore as depicted in **Table 6**.

Table 6: Cases of farmers' suicide

Sr. No.	Name of TAO	Expenditure (₹ in crore)	No. of suicide cases (2008-11)
1	Arni	4.88	17
2	Umarkhed	5.05	57
3	Sindkhed Raja	6.51	15
	Total	16.44	89

(Source: Departmental figures)

Government stated (October 2011) that due to less rainfall, the objective could not be achieved. Efforts should be made to reduce suicides of farmers by taking up more watershed works.

- **Shortfall in completion of watershed works**

Out of a total of 703 watersheds selected for soil and water conservation treatment, 667 watersheds were completed as of March 2011, leaving a balance of 36 incomplete watersheds.

Government stated (October 2011) that the shortfall was due to non-availability of funds as per demand. However, details of funds demanded and dates of receipt were awaited (November 2011).

2.4.8.6 Accelerated Watershed Development Programme (AWDP)

- **Non-observation of norms during execution of works**

As per a decision (January 2008) by a committee¹⁰² under the chairmanship of the Vice President, Maharashtra State Water Conservation Advisory Council, the activity of compartment bunding was to be taken up on priority basis under AWDP. It was instructed (January 2008) in the meeting that a piped outlet be provided in compartment bunding so that the water would be diverted to nearby fields if the storage was more than one foot. This would also help in increasing the water level across the land as well as to conserve the soil.

Out of the 39 test-checked TAOs, AWDP was implemented in 37 TAOs and in two TAOs, non-provision of outlets to compartment bunding was noticed.

- In TAO, Kadegaon, it was noticed (August 2011) that compartment bunding works, covering an area of 2,679.29 hectare, costing ₹ 1.67 crore, were executed without the provision of the outlets. Hence, the purpose of increasing the water level across the land as well as conserving the soil was defeated. The TAO, Kadegaon stated (August 2011) that the estimates were technically sanctioned by SDAO, Vita and there was no provision for outlets in any of the estimates.
- In Sagamner Taluka, it was observed (July 2011) that during 2008-11, works of compartment bunding in 4,606 ha were taken up requiring 18,424 RCC pipes as per the norms of four pipes per hectare. However, only 6,211 pipes costing ₹ 37.27 lakh were purchased and distributed to villages through CAOs.

Compartment bunding works were executed without provision of outlets

¹⁰² An apex body in the State for watershed management

- During a joint field visit by Audit and departmental officials to Mendhewan and Velhare villages in Sangamner taluka which were provided with 1,297 pipes, it was noticed that only five pipes had been used for the work of compartment bunding and the remaining pipes were lying scattered in the villages.



Pipes for compartment bunding lying scattered in the villages

The TAO accepted (July 2011) the fact and stated that the farmers would be convinced to install the pipes.

Government stated (October 2011) that a detailed reply would be submitted, which was awaited (November 2011).

- **Payment to contractors, pieceworkers in cash**

Cash payments to the contractors and pieceworkers were made in violation of Government rules

According to Rule 355 (2) of Maharashtra Treasury Rules (MTR), payments should be made to the contractors/suppliers through cheques.

Out of 39 test-checked TAOs, in two TAOs (Kadegaon and Akole), it was observed that an amount of ₹ 1.99 crore during 2006-11 was paid in cash to various Circle Agriculture Officers (CAOs) in violation of Government rules. Subsequently, the Circle Agriculture Officers also made cash payment to the contractors and pieceworkers which was irregular and contained risk of fraudulent payments.

Government stated (October 2011) that cash payments were made as the bank network was very scattered in the area. The reply is not acceptable as the TAOs and CAOs should have been asked to open bank accounts at nearest bank branch.

- **Shortfall in works taken up and completed**

Out of the total 2,002 watersheds taken up under this scheme during 2007-11, 1,961 watersheds were completed, leaving a balance of 41 incomplete watersheds.

Government stated (October 2011) that the shortfall was due to non-availability of funds as per demand. However, details of funds demanded and dates of receipt were awaited (November 2011).

This indicates that the targets could not be achieved due to shortage of funds. Government should have ensured availability of funds.

2.4.8.7 Miscellaneous issues

(i) Non-adoption of ridge to valley strategy

The ridge to valley strategy was not adopted in all the schemes

According to the instructions (March 1997) of the Director and provisions of the watershed area development guidelines, soil and water conservation works on watersheds were to be executed by adopting ridge to valley strategy (from upper reaches to lower reaches) to develop marginal lands in upper reaches and reduce siltage in Cement *Nalla Bandhs* (CNB), Mati *Nalla Bandhs* (MNB) or Farm Ponds (FP) in lower reaches.

Out of the selected 39 TAOs, it was observed that in seven TAOs, the ridge to valley strategy was not adopted due to farmers' demand and more thrust was given to the works of CNBs, MNBs and FPs in lower reaches, neglecting the execution of works like Continuous Contour Trenches (CCT), Loose Boulder Structure (LBS), Earthen Structure (ES) and Live Check Dam in upper/middle reaches of watersheds. The cases are detailed in **Appendix 2.4.10**.

- The TAO, Jath stated (June 2011) that the activities of the upper and middle reaches were cancelled due to non-availability of required boulders in the nearby areas for LBS works.
- The TAO, Atpadi stated (June 2011) that considering the demand of farmers and local geographical conditions, more thrust was given to works in lower and middle reaches ignoring works in upper reaches.

The Government stated (October 2011) that in VWDM, more works were taken up in lower reaches considering topography of area. Regarding MWDM, it was stated that the works were deleted due to opposition by farmers.

The replies are not acceptable since all the factors should have been taken into account at the planning stage itself.

(ii) Execution of work in command areas of irrigation projects

Soil and water conservation works were undertaken in command areas of irrigation projects

As per the guidelines of the soil and water conservation programme, villages falling within the command area of irrigation projects/schemes should not be selected for development of watersheds. However, it was observed that in Akole and Ardhapur talukas, soil and water conservation works costing ₹ 3.17 crore and ₹ 35 lakh respectively were taken up in command areas of irrigation projects.

The TAO, Akole stated that works were taken up at the tail end of command area of project where water could not reach.

The reply is not acceptable as taking up of farm ponds in command area was against the scheme guidelines. Besides, there was no record proving that water did not reach the tail end. The reply in respect of Ardhapur had not been received (November 2011).

(iii) Incomplete works under different schemes

Incomplete works indicated poor implementation of the schemes

During 2006-11, soil and water conservation works were taken up in selected schemes. It was observed that out of 39 selected TAOs, in 14 TAOs, works remained incomplete under various schemes. The scheme-wise details of incomplete works along with reasons in the test-checked units are given in **Appendix 2.4.11**. It was observed that the works remained incomplete (June

2011) for reasons, such as poor financial status of beneficiaries, non-release of grants, lack of consent of farmers, disputes between villagers and watershed committees, etc. This indicated poor project planning, lack of awareness among beneficiaries, poor fund management, lack of monitoring and poor implementation of schemes.

Government stated (October 2011) that the latest position of completed works would be submitted, which was awaited (November 2011).

(iv) Non-maintenance of watershed development works

No amount was spent on the maintenance of the watershed works

One of the main objectives of various watershed development programmes implemented was to increase the agricultural productivity in the area and thus raising the financial status of the beneficiaries. Further, as all the structures *i.e.* CNB, MNB, Compartment Bunding (CB), CCT, farm ponds *etc.* of every watershed project were prone to damage due to passage of time and deposition of silt in the water, the water storing capacity of the created structures decreased.

In three test-checked TAOs (Jath, Miraj and Ausa), it was noticed that though an amount of ₹ 34.48 crore (Jath ₹ 26.74 crore, Miraj ₹ 5.16 crore and Ausa ₹ 2.58 crore) was spent on soil and water conservation works under NWDP, NADP, AWDP, RVP during 2006-11, no amount was spent on their maintenance.

Thus, in the absence of any arrangement for its future maintenance, the life and utility of these assets created with huge Government funds would be reduced and might not give the expected results.

While accepting the facts, Government stated (October 2011) that provision has been made in 2011-12 for maintenance of watershed development works.

(v) Irregularities in procurement of cement

There was no penalty clause in the rate contract in case of late supply of cement by the rate contract firm

Scrutiny of records in DSAO, Ahmednagar revealed the following irregularities in payment.

- According to condition number 2 (a) of the terms and conditions for supply of cement, 98 *per cent* of the cost of the cement was to be paid by the DSAO on actual receiving of cement consignment with the railway receipts from the manufacturers. The remaining two *per cent* of the cost of cement was to be paid within 30 days from the receipt of cement in good condition.

It was noticed that full payment (₹ 35.66 lakh) was made against the total quantity (1,160.13 MT) of cement indented during 2009-11. Only 1,000 MT cement was supplied (July 2011) and the remaining 160.13 MT cement costing ₹ 4.92 lakh was not supplied as of July 2011. As there was no penalty clause in the rate contract in case of late supply of cement by the rate contract firm, no penalty could be imposed to the contractor for non-supply of the full quantity.

While accepting the point, the Government stated (October 2011) that the terms and conditions would be revised by inclusion of a penalty clause.

- Incorrect freight charges claimed by a rate contract firm for transportation of cement upto Ahmadnagar resulted in excess payment of transportation charges as detailed in **Table 7**.

Table 7: Payment of transportation charges

Year	Cement procured (MT)	Freight charges as per company's bill (₹ per MT)	Actual freight as per railway authority (₹ per MT)	Excess freight charged by company (₹ per MT)	Excess payment (₹)
2008-09	3,810.58	488.80	420.30	68.50	2,61,025
2009-11	1,160.13	480.00	420.30	59.70	69,260
Total	4,970.71				3,30,285

Government agreed (October 2011) to verify the facts from the railway authorities.

2.4.9 Targets and achievements

The position of targets and achievements in respect of selected schemes in the State during 2006-11 was as detailed in **Appendix 2.4.12**.

- It was observed under NADP that against the target of 79,000 farm ponds to be constructed, 62,018 farm ponds were constructed during the period 2007-11.
- Under RVP, soil and water conservation works in 2,06,034 ha were to be executed during 2006-11. However, only 1,74,290 ha were covered.
- In NWDP, 1,37,447 ha were targeted during 2006-11, against which 1,36,849 ha were covered.
- Under MWDM, a total area of 1.77 lakh ha was selected for treatment in eight Mega watersheds and 285 Micro watersheds. The works were still in progress.
- Under VWDM, a total area of 7.08 lakh ha was selected for treatment in 703 watersheds. However, 667 watersheds were completed and the remaining 36 watersheds were incomplete as of March 2011.
- Under AWDP, 2,002 watersheds were targeted for 2007-11, against which 1,961 were completed.

2.4.10 Impact on water table

Records furnished by Groundwater Survey and Development Agency (GSDA) in nine selected districts were analysed to assess the impact on the water table during the period 2006-11. The following points were noticed:

- Static water level (SWL) was more than the average SWL of the last five years at all the talukas of Sangli and Latur districts. While increase (May 2011) in SWL ranged from 0.10 m to 2.28 m in Sangli district, the increase (October 2010) in Latur district ranged from 0.95 m to 5.12 m.

Decrease in Static Water Level was observed in 20 talukas of three districts

- SWL of May 2011 was more than the average SWL of the last five years at all except one taluka of Nanded district, which ranged from 0.08 m to 2.54 m. SWL at Kinwat taluka decreased by 0.17 m.
- SWL had decreased in October 2010 from the average SWL of September taken during the last five years in 12 out of 15 talukas of Raigad district. Decrease in SWL ranged from 1.95 m to 0.037 m. SWL increased in the remaining three talukas of the district in the corresponding period, which ranged from 0.03 m to 2.43 m.
- Out of 15 talukas of Nashik district, SWL increased in eight talukas which ranged from 0.08 m to 2.08 m while the remaining seven talukas it was reduced.

From the analysis made above, it could be concluded that implementation of selected six schemes and other schemes of soil and water conservation funded by GOI and State Government, contributed to increase in SWL in all the talukas of Sangli and Latur. However, decrease in SWL was observed in one taluka of Nanded district, 12 talukas of Raigad district and seven talukas of Nashik district.

2.4.11 Monitoring and internal control mechanism

2.4.11.1 Internal control

Inventory management

Out of 39 test-checked TAOs, in two TAOs, cement stock registers were not maintained, as discussed below:

Vital records were not maintained

- Scrutiny of records of the TAO, Jath revealed that 1,976.80 MT cement costing ₹ 77.58 lakh was procured during the period from 2006-11 but no stock book was maintained.

The TAO, Jath stated (June 2011) that there was no separate godown for the Agriculture Department and the cement was directly supplied to the site of work and the records were kept at the circle level.

The reply is not acceptable as the TAO should have kept an up-to-date record of cement supplied to all CAOs under his control to prevent the chances of misuse, pilferage and excess stocking at the CAO level.

- Similarly, in TAO, Darwha, it was observed that 832.23 MT cement costing ₹ 28.77 lakh was procured during the years 2006-09. However, records relating to receipt, distribution and balance stock of cement were not produced to audit in spite of requests.

The Government stated (October 2011) that the stock register was now being maintained.

However, the fact remains that the records were not produced to Audit for scrutiny.

Non-maintenance of work registers

The Soil Conservation Manual prescribes maintenance of work registers showing details of works, by each CAO, which should be examined every

month by the TAO. In eight test-checked TAOs, it was noticed that the CAOs working under these TAOs, had not maintained work registers. As such, audit could not verify which works were administratively approved, technically sanctioned and what the costs of the work were.

The Government stated (October 2011) that work registers were now being maintained in all the eight TAOs.

2.4.12 Conclusion

Watershed projects were implemented without comprehensive integrated planning. Release of funds was maximum in the month of March indicating avoidable rush of expenditure. Farm ponds under the National Agriculture Development Programme were not serving the intended purpose of percolation of water. The Vidarbha Watershed Development Mission was not successful. Components were not executed in the prescribed sequence by adopting the ‘ridge to valley’ strategy for proper development of watersheds. Watershed treatment works were taken up in command areas of irrigation projects. Works under the test-checked schemes remained incomplete. Implementation of soil and water conservation works, however, did contribute to increase in the Static Water Level in all the talukas of Sangli and Latur districts. However, decrease in Static Water Level was also observed in 20 talukas of three districts. The targets set for the test-checked schemes were not achieved due to financial constraints. The internal control mechanism was weak, as maintenance of records was improper.

2.4.13 Recommendations

Government may:

- prepare a State level comprehensive and integrated plan covering all the watershed development schemes;
- ensure availability of funds and avoid delays in their release;
- implement soil and water conservation works in sequence, adopting the “ridge to valley” strategy; and
- evolve an effective monitoring and control mechanism.

The matter was referred to the Government (September 2011). Reply had not been received (October 2011).