

CHAPTER - II

Audit Framework

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2.1 Audit objective

The measures taken by the State of West Bengal to prevent and contain water pollution were examined with certain specific audit objectives in mind.

The objectives for this Performance Audit were to assess whether:

- *Steps taken by the State Government to prevent water pollution of rivers, lakes and ground water were adequate;*
- *Measures undertaken to control water pollution achieved the desired objective;*
- *Monitoring of water pollution was effective to prevent and control water pollution and*
- *Appropriate steps have been taken to achieve the relevant targets under Sustainable Developmental Goal (SDG)-6, relating to water pollution.*

2.2 Audit criteria

Audit findings are based on criteria derived from the following sources:

Government of India Acts/Rules/Guidelines	• The Water (Prevention and Control of Pollution) Act, 1974. • National Water Policy, 2012. • National Environment Policy, 2006. • NGRBA Guidelines and NGRBA Programme Framework. • Manual on Sewerage and Sewage Treatment Systems (2013). • Central Public Health and Environmental Engineering Organization (CPHEEO), Ministry of Urban Development, Government of India.
Government of WB Acts/Rules/Guidelines	• State Environment Plan. • West Bengal Prevention and Control of Water Pollution (procedure for Immersion of Idol after Pujas) Rules in September 2018.
Others	• NGT orders. • Guidelines and instructions issued by Central Pollution Control Board/ State Pollution Control Boards. • Minutes of the River Rejuvenation Committee Meetings.

Water quality criteria

Central Pollution Control Board (CPCB) has developed a concept of *designated best use* for use of water. According to this concept, out of the several uses of water of a particular water body, the use which demands highest quality is termed its *designated best use*. Five *designated best uses* have been identified.

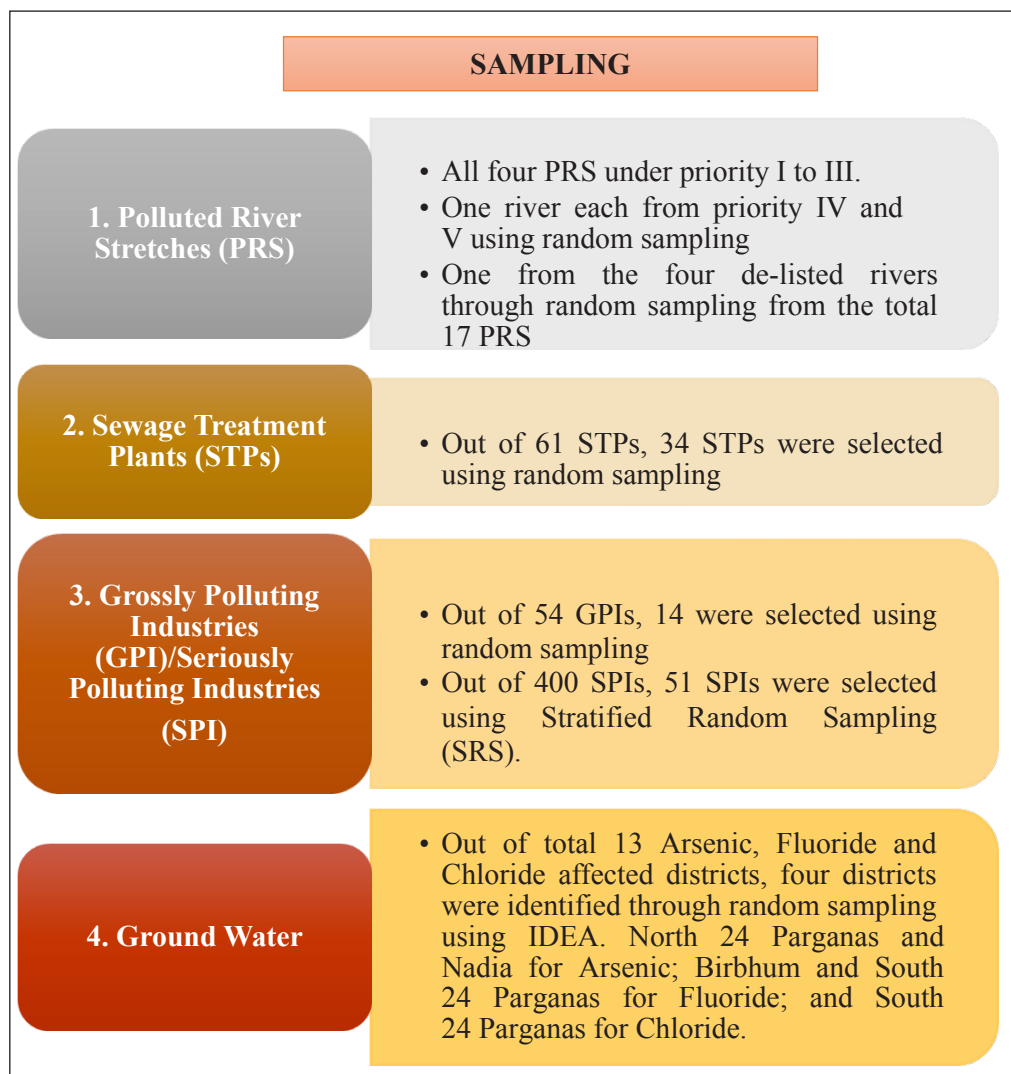
This classification helps the water quality managers and planners to set water quality targets and design suitable restoration programmes for various water bodies as shown in **Table 2.1**.

Table 2.1: Water Quality Criteria

Designated Best Use	Class of water	Criteria
Drinking water source without conventional treatment but after disinfection	A	- Total Coliforms Organism MPN/100 ml shall be 50 or less - pH between 6.5 and 8.5 - Dissolved Oxygen (DO) 6 mg/l or more - Biochemical Oxygen Demand (BOD) - five days 20°C 2mg/l or less
Outdoor bathing (Organised)	B	- pH between 6.5 and 8.5 - Dissolved Oxygen 5 mg/l or more - Biochemical Oxygen Demand - three days 20°C 3 mg/l or less - Faecal Coliforms≤500 MPN/100 ml (desirable) - Faecal Coliforms≤2500 MPN/100 ml (max permissible) - Faecal Streptococci≤100 MPN/100 ml (desirable) - Faecal Streptococci≤500 MPN/100 ml (max permissible)
Drinking water source after conventional treatment and disinfection	C	- Total Coliforms Organism MPN/100ml shall be 5000 or less - pH between 6.0 to 9.0 - Dissolved Oxygen 4mg/l or more - Biochemical Oxygen Demand - five days 20°C 3mg/l or less
Propagation of Wildlife and Fisheries	D	- pH between 6.5 to 8.5 - Dissolved Oxygen 4mg/l or more - Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	- pH between 6.0 to 8.5 - Electrical Conductivity at 25°C micro mhos/cm Max 2250 - Sodium absorption Ratio Max 26 - Boron Max 2mg/l

2.3 Audit scope and Methodology

The Performance Audit was conducted between June and November 2023, covering the period from 2018-19 to 2022-23. The Performance Audit sought to evaluate the systems and processes in place for prevention, control and monitoring of water pollution caused due to (i) urban sewage, (ii) industrial effluents and (iii) groundwater metal contamination (*i.e.* arsenic, fluoride, chloride) for the period of 2018-23.

Audit sampling included the following:**Audit Methodology included the following:**

- ✓ Analysis of records/documents and data using Computer Assisted Audit Techniques (CAAT)
- ✓ Issue of requisitions/queries/observations
- ✓ Joint physical inspections along with photographic evidence
- ✓ Independent water quality tests by engaging CPCB.

CPCB was requested to extend its water quality analysis service for testing of the quality of treated wastewater of eight STPs, four Effluent Treatment Plants (ETPs) and a Common Effluent Treatment Plant (CETP). The water from seven drains/canals and a lake were also subjected to quality analysis by soliciting services of CPCB.

An Entry Conference was held on 27 June 2023, with the Secretary, Environment Department wherein the audit objectives, scope and methodology were discussed. Representatives from other line departments and organisations such as WBPCB, State Urban Development Agency (SUDA), Kolkata Municipal Corporation (KMC), Kolkata Metropolitan Development Authority (KMDA),

State Water Investigation Directorate (SWID) and East Kolkata Wetlands Management Authority (EKWMA) also participated in the Entry Conference.

A separate meeting with Member Secretary, WBPCB was held on 11 July 2023 wherein the audit objectives, scope and methodology were also discussed.

Exit Conference was held on 12 March 2024, with the Special Secretary, Environment Department wherein the audit observations were discussed. The replies obtained from the Department have suitably been incorporated in the Report, wherever relevant.

2.4 Structure of the Audit Report

The Performance Audit Report has been structured on the basis of specific audit findings from the test checked districts and contains seven chapters.

Chapter I	• Introduction
Chapter II	• Audit Framework
Chapter III	• Planning for prevention and control of water pollution in Rivers, Lakes and Ground water
Chapter IV	• Municipal Sewage treatment for restoration of Polluted River stretches and Lakes
Chapter V	• Industrial Wastewater Management
Chapter VI	• Ground Water Quality Management
Chapter VII	• Monitoring of Water Quality

2.5 Acknowledgement

We acknowledge the co-operation extended by the Environment Department, UD&MA, PHED, WBPCB and KMDA in providing the records and information for smooth conduct of the Performance Audit. We also acknowledge the assistance through technical expertise provided for conducting water quality tests by the Regional Offices of CPCB.