

**BEFORE THE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH, NEW DELHI  
ORIGINAL APPLICATION NO. 693 OF 2023**

**IN THE MATTER OF:**

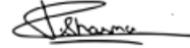
**IN RE: NEWS ITEM APPEARING IN DECCAN HERALD DATED 24.10.2023  
TITLED “POLLUTION CONTROL BOARDS ARE THE WEAK LINK”**

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**THROUGH**

**3888**



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DATE: 17.04.2025

PLACE: NEW DELHI

BEFORE THE NATIONAL GREEN TRIBUNAL  
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ORIGINAL APPLICATION NO. 693 OF 2023

**IN THE MATTER OF:**

**IN RE: NEWS ITEM APPEARING IN DECCAN HERALD DATED 24.10.2023  
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**UPDATED REPLY ON BEHALF OF THE RESPONDENT NO. 13, PRINCIPAL  
SECRETARY, DEPARTMENT OF ENVIRONMENT & FOREST**

1. That the instant Original Application being OA No. 693 of 2023 is a *sou moto* cognizance taken by this Hon’ble Tribunal and is titled as ***“In Re: News Item appearing in Deccan Herald dated 24.10.2023 titled “Pollution Control Boards Are the Weak Link”***. This Hon’ble Tribunal, vide its Order dated 23.11.2023 directed as under:

*“12. The above respondents are directed to file their reports showing the sanctioned strength and working strength of staff in the concerned SPCBs/PCCs, CPCB the ratio of administrative, Ministerial and Technical staff in the SPCBs/PCCs, CPCB and the regulating and monitoring facilities which are available with the SPCBs/PCCs/CPCB. In respect of laboratories, the report will disclose the sanctioned strength and present working strength of staff, the infrastructure which is available in the labs and further need for equipment and infrastructure in those labs and the provisions made in laboratories for enforcement and monitoring of hotspots in critically polluted areas. The report should also include the availability of budget and its sources and expenditure in the last two years (2020-2021 and 2021-2022) ....”*

2. That, the Answering Respondent in compliance of this Hon’ble Tribunal’s Order dated 23.11.2023 not only provided all the relevant information to the Central

Pollution Control Board (hereinafter referred to as “CPCB”) but also filed its Reply dated 16.01.2024 before this Hon'ble Tribunal, *however*, the Answering Respondent is filing this instant updated reply in order to appraise this Hon'ble Tribunal about the current situation of vacancies, regulating and monitoring facilities & the infrastructure available with the laboratories of Madhya Pradesh Pollution Control Board (hereinafter referred to as “MPPCB”).

3. That, the updated information related to Sanction strength and Working strength of staff in MPPCB in terms of administrative, engineering and scientific staff is tabulated as follows:

Category of Post	Sanctioned	Vacancy as on 11.09.2024	Filled after 11.09.2024	Current Vacancy
Scientific	441	275	1	274 Direct - 151 Promotional - 123
Engineering	153	110	2	108 Direct - 68 Promotional - 40
Administrative	634	395	3	392 Direct - 273 Promotional - 119

**Note:** In order to fill the vacancy gap MPPCB has taken services of 4 Scientific Staff, 18 Engineering Staff & 176 Administrative staff from an outsource agency which are exclusive of details mentioned in the table hereinabove.

Copy of the chart highlighting current status of vacancies in MPPCB is marked and annexed herewith as **ANNEXURE R-13/1**.

4. That, with regards to the information related to the laboratories regarding accreditation/recognitions, MPPCB in its reply dated 16.01.2024 had submitted that the MPPCB is having 10 Regional laboratories located across the state and

1 Central laboratory located at H.Q. in Bhopal. It was stated that out of these ten laboratories eight are Regional laboratories presently accredited as per ISO 17025 and 01 Central laboratory Recognized under EPA, 1986. Also, it was stated that a Letter No. 303 dated 18.12.2023 had already been issued to all regional laboratories to take initiatives to get their labs accredited and recognised under various ISO standards [ISO-17025 & 45001] and recognition under EPA [1986] recognitions.

5. That, in compliance of Order dated 23.11.2023 a detailed report was submitted by MPPCB with the CPCB with regard to upgradation of laboratory infrastructure, however, this Hon'ble Tribunal *vide* Order dated 28.01.2025 directed the CPCB to re-examine the disclosures made by all the PCBs and PCCs in their reports about the laboratory infrastructure and ascertain the gaps/deficiencies/lack of facility including recognition of laboratories as NABL, environment protection laboratories and disclose the said information in its next report. This Hon'ble Tribunal also directed the PCBs and PCCs which had not filed their reports w.r.t the same to do so within 4 weeks.
6. Even though the MPPCB had filed its report with the CPCB, it is still filing this instant reply in addition to its previous reply dated 16.01.2024 highlighting the current status of infrastructure of laboratories currently operating under MPPCB.

Copy of the chart highlighting facilities available for monitoring of environmental parameters & chart highlighting details of laboratory infrastructure (instruments and equipment) has been marked and annexed herewith as **ANNEXURE R-13/2**.

7. That, in order to highlight the individual capabilities and capacities of all the laboratories operating under MPPCB, board has prepared a separate list for all the 11 laboratories [i.e. 1 Central & 10 regional situated at Mandideep, Gwalior, Jabalpur, Indore, Ujjain, Sagar, Satna, Rewa, Shahdol & Singrauli respectively] pointing out the facilities available for monitoring of environmental parameters

and details of infrastructure (instruments and equipment) available at their respective sites.

True Copy of separate charts highlighting facilities available for monitoring of environmental parameters & chart highlighting details of laboratory infrastructure (instruments and equipment) with each laboratory individually is marked and annexed herewith as **ANNEXURE R-13/3**.

8. It is stated that the Answering Respondent (i.e. MPPCB) has always been compliant with all the Order(s) passed by this Hon'ble Tribunal and that the instant Reply is being filed by MPPCB in addition to its reply dated 16.01.2024 highlighting the current status of issues which are being being dealt by this Hon'ble Tribunal in this instant case.
9. That, the Answering Respondent further craves leave of this Hon'ble Tribunal to file a detailed reply and/or affidavit as and when the Hon'ble Tribunal directs or when the same is necessitated in the interest of justice. An affidavit in the support of the reply is annexed.

**THROUGH**



**RAGHAV SHARMA**

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**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL  
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**ORIGINAL APPLICATION NO. 693 OF 2023**

**IN THE MATTER OF:**

**IN RE: NEWS ITEM APPEARING IN DECCAN HERALD DATED  
24.10.2023 TITLED "POLLUTION CONTROL BOARDS ARE THE WEAK  
LINK"**

**AFFIDAVIT ON BEHALF OF RESPONDENT NO. 13 (MADHYA  
PRADESH POLLUTION CONTROL BOARD)**

I, Kalpana Pazare W/o Shri Ramesh Pazare, Occupation: Superintendent Administration, M.P. Pollution Control Board, Office at E-5, Arera Colony, Paryavaran Parisar, Bhopal, Madhya Pradesh – 462016 do hereby affirm and state as under:

1. I say that the present affidavit is being filed on behalf of Respondent No. 13 in my capacity as Officer in Charge of the case in the present matter, I am well conversant with the facts and circumstances of the present case and as such I am competent to swear and file this Affidavit in the present Application.
2. That I am filing the present information on behalf of Madhya Pradesh Pollution Control Board in compliance of order dated 28.01.2025 before the Hon'ble Tribunal and I have understood the same.
3. That the contents of this information are true and correct to the best of my knowledge and the available office records and no material fact is concealed or suppressed.

**DEPONENT**

**कल्पना पाजारे  
अधीक्षक**



**VERIFICATION**

I Kaplana Pajare named above state that whatever has been stated herein above is true to my own knowledge, belief and based on the documents/records available in the office and the contents of the same are true and correct to the best of my knowledge.

*Kaplana Pajare*  
**DEPONENT**

8 APR 2025

PLACE: BHOPAL

DATE: 08.04.2025

SOLEMNLY AFFIRMED BEFORE  
ME BY THE WITHIN NAMED

*N. P. Balbhadra*  
08/04/2025

N. P. BALBHADRA  
NOTARY-ADVOCATE  
SHAHDOL, BHOPAL (M.P.)

IDENTIFIED BY ME

SIGNATURE.....  
NAME..... *Pranjal Pandey, Advocate*  
ADDRESS..... *H3, Vidhya Vihar,  
Moshanagar, Bhopal*

8 APR 2025



## Annexure R-13/1

Annexure - 1

## PART A: STATUS OF FILLING OF VACANT POSTS

(Status as on 11/09/2024)

Name of the Board / Committee: Madhya Pradesh Pollution Control Board

Category of post	Status of Sanctioned posts in Number				Details of current vacancies in number	Action Taken (Approval of the Govt. , Engagement agency, Advertisement, Exam date etc.)	Will the vacancy be filled by 30.4.2025?, (say Yes or No)	If not, the time line and reason for delay may be mentioned.	
	Sanctioned	Vacancy as on 11.09.24	Filled after 11.09.24	Current Vacancy					
a) Scientific	441	275	1	274	a) Direct	151	Demand letter was sent to the Staff Selection Board for 18 posts of Scientist, on which recruitment and advertised on 25.02.25 Exam Date probably start from 15.05.25.	No	Probably July 2026, beacuse it depend upon Staff Selection Board, Bhopal,
					b) Promotion	123	The following order has been passed by Hon'ble High Court, Jabalpur on promotion dated 30/04/2016: "In view whereof, the plea for prospective overruling of the provisions relating to reservation in promotion in the Rules of 2002 is negatived."	No	Case is pending in Supreme Court
					c) Deputation	-	Not applicable	No	Not applicable
b) Engineering	153	110	2	108	a) Direct	68	Demand letter was sent to the Staff Selection Board for 34 posts of Assistant Engineer (Environment) & Assistant Engineer (Computer)	No	Probably July 2026, beacuse it depend upon Staff Selection Board, Bhopal
					b) Promotion	40	The following order has been passed by Hon'ble High Court, Jabalpur on promotion dated 30/04/2016: "In view whereof, the plea for prospective overruling of the provisions relating to reservation in promotion in the Rules of 2002 is negatived."	No	Case is pending in Supreme Court
					c) Deputation	-	Not applicable	No	Not applicable
c) Administration	634	395	3	392	a) Direct	273	Demand letter was sent to the Staff Selection Board for following posts :- Section Officer - 02 Assistant Law Officer - 02 Legal Assistant - 05 Public Relation Assistant - 02 on which recruitment and Advertised on 25.02.25. Exam Date probably start from 15.05.25. Advertisement still be process for remaining posts in Staff Selection Board, Bhopal at the earliest.	No	Probably July 2026 , beacuse it depend upon Staff Selection Board, Bhopal
					b) Promotion	119	The following order has been passed by Hon'ble High Court, Jabalpur on promotion dated 30/04/2016: "In view whereof, the plea for prospective overruling of the provisions relating to reservation in promotion in the Rules of 2002 is negatived."	No	Case is pending in Supreme Court
					c) Deputation	-	Not applicable	No	Not applicable

## Specific remarks, if any:

To fulfill the vacancy gap, Board has taken the services of 4 Scientific staff from a outsource agency.

To fulfill the vacancy gap, Board has taken the services of 176 Administrative staff from a outsource agency.

To fulfill the vacancy gap, Board has taken the services of 18 Engineering staff from a outsource agency.

LABORATORY ANALYTICAL FACILITIES				
Name of the Board / Committee: Madhya Pradesh Pollution Control Board M.P				
PART I: Facility available for monitoring of environmental parameters:				
S. No.	Parameters	Facilities Available (Yes / No)	If facility is not available, Specify Timeline for addition of this parameter. (in months)	Action Taken for addition of this parameter (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. Sample Matrix / Group of Water and Wastewater</b>				
<b>(a) Physical Tests</b>				
1	Temperature	Yes		
2	Colour	Yes		
3	pH	Yes		
4	Turbidity	Yes		
5	Conductivity	Yes		
6	Total Solids	Yes		
7	Total Dissolved Solids (TDS)	Yes		
8	Total Suspended Solids (TSS)	Yes		
<b>(b) Inorganic Tests</b>				
<b>(i) General &amp; Non-metallic</b>				
1	Alkalinity	Yes		
2	Chloride	Yes		
3	Cyanide	Yes		
4	Dissolved oxygen	Yes		
5	Nitrite nitrogen	Yes		
6	Nitrate nitrogen	Yes		
7	Ammonical nitrogen	Yes		
8	Fluoride	Yes		
9	Hardness (Total)	Yes		

	10	Calcium	Yes		
	11	Magnesium	Yes		
	12	Phosphate	Yes		
	13	Sulphate	Yes		
	14	Sulphide	Yes		
	15	Total Residual chlorine (TRC)	Yes		
<b>(ii) Trace Metals Tests</b>					
	1	Aluminium (Al)	Yes		
	2	Arsenic (As) Total	Yes		
	3	Barium	Yes		
	4	Boron	Yes		
	5	Chromium (Cr) Hexavalent	Yes		
	6	Chromium (Cr) Total	Yes		
	7	Cadmium (Cd)	Yes		
	8	Cobalt (Co)	Yes		
	9	Copper (Cu)	Yes		
	10	Iron (Fe)	Yes		
	11	Lead (Pb)	Yes		
	12	Manganese (Mn)	Yes		
	13	Mercury (Hg)	Yes		
	14	Nickel (Ni)	Yes		
	15	Potassium (K)	Yes		
	16	Sodium (Na)	Yes		
	17	Vanadium (V)	Yes		
	18	Zinc (Zn)	Yes		
	19	Selenium (Se)	Yes		
<b>(c) Organics (General) and Trace Organics Tests</b>					
	1	Biological Oxygen Demand (BOD)	Yes		
	2	Chemical oxygen demand (COD)	Yes		
	3	Oil & Grease	Yes		

	4	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	Yes		
	5	Benzopyrene	Yes		
	6	<b>Pesticides</b>			
	6.a	<b>Organochlorine Pesticides (OCPs) Tests</b>			
	i	Aldrin	Yes		
	ii	Alpha Endosulphan	Yes		
	iii	p,p'-DDT	Yes		
	iv	Alpha-HCH	Yes		
	v	Beta HCH	Yes		
	vi	Beta Endosulphan	Yes		
	vii	Gama-HCH	Yes		
	viii	o,p'-DDT	Yes		
	ix	p,p'-DDE	Yes		
	6.b	<b>Organophosphorus Pesticides (OPPs) Tests</b>			
	i	Malathion	Yes		
	ii	Methyl parathion	Yes		
	iii	Chlorpyrifos	Yes		
	iv	Dimethoate	Yes		
	v	Dieldrin	Yes		
	vi	Ethion	Yes		
	<b>(d) Microbiological Tests</b>				
	1	Total Coliform	Yes		
	2	Faecal Coliform	Yes		
	3	E. Coli	Yes		
	4	Faecal Streptococci	Yes		
	<b>(e) Toxicological Tests</b>				
	1	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	Yes		
	<b>B. Sample Matrix / Group of Solid / Solid Waste</b>				
	<b>(a) Soil / Sediment / Compost Tests</b>				
	1	Cation Exchange Capacity (CEC)	Yes		
	2	Electrical Conductivity (EC)	Yes		
	3	Organic carbon (Chemical Method )	Yes		

	4	pH	Yes		
	5	Soil moisture	Yes		
	6	Total nitrogen	Yes		
	7	Metals by digestion (As, Cd, Cr, Pb, Ni etc.)	Yes		
<b>(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests</b>					
	1	Corrosivity	Yes		
	2	Ignitability (Flash Point)	Yes		
	3	Loss on Drying at 1050C (% Moisture Content)	Yes		
	4	Loss on Drying at 5500C (% Organic Content)	Yes		
	5	pH	Yes		
	6	Organic carbon/matter (Chemical Method )	Yes		
	7	Calorific Value	Yes		
	8	Toxicity Characteristics leaching procedure (TCLP) Leachate and Metals in Leachate (As,Cd,Cr, Pb, Ni)	Yes		
<b>C. Sample Matrix / Group of Analytes: Air</b>					
<b>(a) Ambient Air</b>					
	1	Nitrogen dioxide as NO2	Yes		
	2	Sulphur dioxide (SO2)	Yes		
	3	Particulate matter (PM10)	Yes		
	4	Particulate matter (PM2.5)	Yes		
	5	Carbon Monoxide	Yes		
	6	Ozone	Yes		
	7	Benzene	Yes		
	8	Ammonia	Yes		
	9	Metals in Particulate Matter, Pb	Yes		
	10	Metals in Particulate Matter, As	Yes		
	11	Metals in Particulate Matter, Ni	Yes		

	12	Particulate Benzo-a-Pyrene (BaP)	Yes		
<b>(b) Stack Gas / Stationary Source Emission</b>					
	1	Particulate Matter	Yes		
	2	Sulphur Dioxide	Yes		
	3	Carbon Dioxide	Yes		
	4	Carbon Monoxide (NDIR based Method)	Yes		
	5	Temperature	Yes		
	6	Moisture	Yes		
	7	Oxygen	Yes		
	8	Oxides of Nitrogen	Yes		
	9	Halides (HCL/HF)	Yes		
<b>(c) Noise Level</b>					
	1	Ambient Noise level measurement (20 to 140 dB)	Yes		
	2	Source Noise Level Measurement (Industrial process, DG set- 20 to 140dB)	Yes		
<b>(d) Meteorological Monitoring</b>					
	1	Ambient Temperature	Yes		
	2	Wind direction	Yes		
	3	Wind speed	Yes		
	4	Relative Humidity	Yes		
	5	Mixing Height	Yes		
Specific remarks, if any:					
<b>PART II: Details of Laboratory Infrastructure (Instruments and Equipment)</b>					

	S. No.	Name of Instrument / Equipments	Available Yes / No	If the Instrument / Equipment is not available, Specify Timeline for procurement of this instrument (in months)	Action Taken for procurement of this Instrument / Equipment (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>					
<b>a ) Mandatory Requirements</b>					
	1	Portable / Pen type pH meter / pH strip	Yes		
	2	Portable Dissolved Oxygen Meter / Field Fixing using chemicals	Yes		
	3	Electrical Conductivity meter pen type	Yes		
	4	Flow meter / Physical flow measuring	Yes		
	5	GPS / Mobile with GPS app	Yes		
	6	Ice Box (2 nos.) (150 litre & 100 litre capacities)	Yes		
	7	Thermometer	Yes		
	8	Stainless steel bucket with nylon rope and mug	Yes		
	9	Ground water level measuring device	No	12	Specification Finalized
	10	Scoop / shovel	Yes		
	11	Auger / core sampler	Yes		
<b>b) Optional Requirements</b>					
	1	Bottom Sampler / Depth sampler	Yes		
	2	Chloroscope for residual chlorine	Yes		
	3	Vandorn or equivalent water sampler (Automatic sampler when composite sampling to be done)	Yes		
	4	Ekman Dredge	Yes		
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>					

a) Mandatory Requirements					
	1	Fine dust samplers PM2.5 (*4 Nos)	Yes		
	2	Respirable Dust Sampler PM 10 (* 4 Nos)	Yes		
	3	High Volume Sampler ( SPM ) (4 Nos)	Yes		
	4	Handy Sampler with set of glass impingers (*2 Nos)	Yes		
	5	Low Volume Sampler (LVS)	Yes		
	6	Tedler bags different sizes	Yes		
	7	Meteorological tower (All in one telescopic Mast) with sensors comprising wind speed, wind direction, ambient temp., Relative humidity, Solar radiation, rainfall etc.	Yes		
	8	Nitrogen Cylinder portable	No	12	Specification Finalized
	9	Activated Charcoal tubes/ Tenex	No	12	Specification Finalized
	10	Barometer (Digital)	Yes		
	11	Isokinetic Stack Monitoring Kit complete with Stack monitoring instrument panel with inclined cum vertical manometer, Cold Box, Vacuum pump, Glass assembly impingers	Yes		
	12	Modified S type Stainless steel Pitot tube (Standard length) with Assembly	Yes		
	13	Monoblock type, rotary design vacuum pump	Yes		
	14	Orsat Apparatus	Yes		

	15	Source emission monitoring Impingers train set with spare impingers 100 ml & 225 ml capacity	Yes		
	16	Stainless steel heated Sampling Probes with thimble holders short and long	Yes		
	17	Flue Gas analyzer	Yes		
	18	Thermometer/ Thermocouple	Yes		
	19	Calibrator for Noise Meters	Yes		
	20	Digital Sound level ( Noise ) Metres	Yes		
	21	Portable TOC Analyzer for emission monitoring.	No	12	Specification Finalized
	22	Polyurethane Foam PUF Sampler	No	12	Specification Finalized
<b>b) Optional Requirements</b>					
	1	Anemometer	Yes		
	2	Weather Monitoring system	Yes		
	3	Wind speed/wind direction monitor	Yes		
	4	Continuous Ambient Air Monitoring System, Fixed	Yes		
	5	Continuous PM10 Analyzer	Yes		
	6	Continuous Ambient Air Monitoring System, Mobile	Yes		
	7	Continuous PM2.5 analyzer	Yes		
	8	Ambient Nitrogen Oxides (NO-NO2- NOx Analyzer	Yes		
	9	Ambient Ozone Analyzer	Yes		
	10	Ambient BTEX Analyzer	Yes		
	11	Multipoint Gas Calibration system	Yes		
	12	Ambient Sulphur Dioxide analyzer	Yes		
	13	Ambient Carbon Monoxide & Carbon dioxide analyzer	Yes		
	14	Total Hydrocarbon analyzer	Yes		

	15	Ambient Ammonia analyzer	Yes		
	16	Zero Gas Generator	No	12	Specification Finalized
	17	Synthetic Air Cylinder	No	12	Specification Finalized
	18	Calibration Gas Cylinders, SO <sub>2</sub> , NO, CO, NH <sub>3</sub> , Benzene and Toluene One each with stainless steel Regulators	Yes		
	19	Continuous emission monitoring equipment	Yes		
	20	19 inch Rack mounting system for air analyzers	Yes		
	21	Dry Gas Meter	Yes		
	22	Diesel Exhaust analyzer	Yes		
	23	Exhaust CO/HC analyzer with Sampling Probe	Yes		
	24	Automated Noise Monitoring System	Yes		
	25	Integrating Sound level meter	Yes		
	26	Continuous PM <sub>10</sub> & PM <sub>2.5</sub> Monitoring Analyzer TEOM system	Yes		
	27	Top loading orifice kit for calibration of HVS	Yes		
	28	Permeation tubes (SO <sub>2</sub> , NO-NO <sub>2</sub> -NO <sub>x</sub> , NH <sub>3</sub> , BTX)	No	12	Specification Finalized
<b>C. List of Equipment required for processing of Environmental Samples:</b>					
<b>a) Mandatory Requirements</b>					
	1	Accelerated Solvent Extraction (ASE) System	Yes		
	2	Ammonia distillation assembly/TKN Analyzer	Yes		
	3	Analytical Balance 4/5 digit & 6 digit (Digital)	Yes		

	4	Aquarium for Toxicity bioassay test with complete accessories (*4 Nos)	Yes		
	5	Autoclave (*2 Nos)	Yes		
	6	Bacteriological Incubators Stainless steel (*2 Nos)	Yes		
	7	Bio safety cabinets	Yes		
	8	BOD Incubators (2 nos.)	Yes		
	9	Centrifuge	Yes		
	10	COD Digestion heated Blocks (2) with capacity 16 nos. or more	Yes		
	11	Cyanide Distillation Assembly (3)	No	12	Specification Finalized
	12	Deep Freezer- Capacity 500 litre	Yes		
	13	Laboratory Ball Mill Grinder	Yes		
	14	Laboratory Grinder	Yes		
	15	Laminar Flow bench for Microbiological analysis	Yes		
	16	Magnetic Stirrer with heating system (*2 Nos)	Yes		
	17	Mechanical Shaker	Yes		
	18	Membrane Filtration assembly with vacuum pump (2 nos.)	Yes		
	19	Microbial culture refrigerator	Yes		
	20	Microwave Digester with 16 vessels/ Hot Plate	Yes		
	21	Muffle Furnace (*1 Nos), Range 1200 C	Yes		
	22	Phenol distillation assembly (3)	No	12	Specification Finalized
	23	Plate counter, Manual/Automatic	Yes		
	24	Digestion Chambers/ Fume hood	Yes		
	25	Digital Thermometer & Humidity meter- All lab area	Yes		
	26	Dispensers (Various capacities ) up to 5, 10, 25 & 50 ml	Yes		

	27	Filtration Assembly with vacuum pump	Yes		
	28	Fluoride Distillation Assembly (3)	No	12	Specification Finalized
	29	Arsenic / Fluoride Glass Distillation assemblies	No	12	Specification Finalized
	30	Glass Double Distillation Assembly /Water Purification System	Yes		
	31	Heating mantles (2 nos.)	Yes		
	32	Hot plates (small, Medium and Large ) (*2 nos.)	Yes		
	33	Thermo Hygrometer	Yes		
	34	Imhoff Cone	Yes		
	35	Top loading Precision Digital Balance (minimum detection 0.001mg/0.01 mg) with anti-vibration facility- 3 nos. i.e 4/5 Digit (2 nos), - 6 Digit (1 no)	Yes		
	36	Refrigerators Big Size 300 litres or more, double door- 2 nos.	Yes		
	37	Rotary Evaporator (Buchi type) with water recirculating chiller	Yes		
	38	Separating funnel shaker	Yes		
	39	Soxhlet Apparatus	Yes		
	40	Solid Phase Extraction (SPE) /SPME Extraction system	Yes		
	41	Thermometer (Alcohol)	Yes		
	42	Dry & wet bulb Thermometer	Yes		
	43	Toxicity characteristic leaching procedure (TCLP) Extractors (Zero head and Bottle)	Yes		
	44	Ultra sonic water bath- Capacity 3 litre	Yes		

	45	Water Bath with temperature control (*2 Nos)	Yes		
	46	Water Bath with temp. for mercury sample digestion- 20 BOD Bottles	Yes		
<b>D. Analytical Instruments at Environmental Laboratories</b>					
<b>a) Mandatory Requirements</b>					
	1	Atomic Absorption spectrometer (AAS)- Flame, Hydride & Graphite Tube Atomizer (GTA)	Yes		
	2	Binocular Stereo Zoom Microscope	Yes		
	3	Bomb Calorimeter	Yes		
	4	BTX Analyzer with BTX calibrator	Yes		
	5	Colony counter	Yes		
	6	Conductivity meter- 2 nos.	Yes		
	7	Environment conditioning chamber			
	8	Digital Burettes- 50 ml*2, 100 ml*2	Yes		
	9	Dissolved Oxygen Meter (Bench model)	Yes		
	10	Flame Photometer	Yes		
	11	Flash Point Apparatus	Yes		
	12	Gas Chromatograph Mass Spectrometer	Yes		
	13	High Performance Liquid Chromatograph (HPLC)	Yes		
	14	Inductively Coupled Plasma (ICP) Spectrometer-OES			
	15	Ion Chromatograph Anion & Cations	No	12	Specification Finalized
	16	Methane and Non Methane (NMHC) Analyzer	Yes		
	17	Microscope – 100x	Yes		
	18	Microscope Binocular Research	Yes		
	19	CO (NDIR based) Analyzer	Yes		

	20	Nephelometer (Turbidity Meter)	Yes		
	21	pH-Meter with combined electrode (3 point)- 2 nos.	Yes		
	22	Specific ion Analyzer with ion selective electrodes	No	12	Specification Finalized
	23	Spectrophotometer Visible (Portable)	No	12	Specification Finalized
	24	TKN Analyzer semi-automatic with aluminum block digester	Yes		
	25	UV-Vis Spectrophotometer	Yes		
	26	Moisture Content Analyzer	Yes		
<b>b) Optional Requirements</b>					
	1	Automatic Titration Assembly	Yes		
	2	Carbon, Hydrogen, Nitrogen and Sulphur (CHNS) Elemental Analyzer	Yes		
	3	EDXRF Analyzer/WDXRF Analyzer	No	12	Specification Finalized
	4	Fourier-transform infrared Spectrometer (FTIR)			
	5	Flocculator ( Jar testing apparatus)	Yes		
	6	Toxic Gas Analyzer	Yes		
	7	Organic Halogen (AOX/TOX) Analyzer	No	12	Specification Finalized
	8	TOC Analyzer	Yes		
	9	High Resolution Mass Spectrometer (HRGC-HRMS)			
	10	Inductively Coupled Plasma Mass (ICP-MS) Spectrometer	Yes		
	11	X Ray Fluorescence (XRF) Spectrometer (Portable)			

<b>PART I: Facility available for monitoring of environmental parameters:</b>				
<b>Parameters</b>	<b>Total Number of Parameters</b>	<b>Facility available for</b>	<b>Facility not available for</b>	
<b>A. Sample Matrix / Group of Water and Wastewater</b>	<b>67</b>	<b>67</b>	<b>0</b>	<b>0</b>
(a) Physical Tests	8	8	0	0
(b) Inorganic Tests	<b>34</b>	<b>34</b>	<b>0</b>	<b>0</b>
(i) General & Non-metallic	15	15	0	0
(ii) Trace Metals Tests	19	19	0	0
(c) Organics (General) and Trace Organics Tests	<b>20</b>	<b>20</b>	<b>0</b>	<b>0</b>
Pesticides	15	15	0	0
Organochlorine Pesticides (OCPs) Tests	9	9	0	0
Organophosphorus Pesticides (OPPs) Tests	6	6	0	0
(d) Microbiological Tests	<b>4</b>	<b>4</b>	<b>0</b>	<b>0</b>
(e) Toxicological Tests	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>	<b>15</b>	<b>15</b>	<b>0</b>	<b>0</b>
(a) Soil / Sediment / Compost Tests	7	7	0	0
(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests	8	8	0	0
<b>C. Sample Matrix / Group of Analytes: Air</b>	<b>28</b>	<b>28</b>	<b>0</b>	<b>0</b>
(a) Ambient Air	12	12	0	0
(b) Stack Gas / Stationary Source Emission	9	9	0	0
(c) Noise Level	2	2	0	0
(d) Meteorological Monitoring	5	5	0	0
<b>PART II: Details of Laboratory Infrastructure (Instruments and Equipment)</b>				
<b>Name of Instrument / Equipments</b>	<b>Total Numbers</b>	<b>Number of Available</b>	<b>Number of Not Available</b>	
<b>Total</b>	<b>148</b>	<b>126</b>	<b>17</b>	<b>5</b>
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>	<b>15</b>	<b>14</b>	<b>1</b>	<b>0</b>
a) Mandatory Requirements	11	10	1	0
b) Optional Requirements	4	4	0	0
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>	<b>50</b>	<b>43</b>	<b>7</b>	<b>0</b>
a) Mandatory Requirements	22	18	4	0
b) Optional Requirements	28	25	3	0
<b>C. List of Equipment required for processing of Environmental Samples:</b>	<b>46</b>	<b>42</b>	<b>4</b>	<b>0</b>
a) Mandatory Requirements	46	42	4	0
<b>D. Analytical Instruments at Environmental Laboratories</b>	<b>37</b>	<b>27</b>	<b>5</b>	<b>0</b>
a) Mandatory Requirements	26	21	3	2
b) Optional Requirements	11	6	2	3

<b>Note: It is requested to please ensure that each sheet is created separately for each laboratory and rename the sheet accordingly . For e.g. Central Laboratory, Regional Laboratory etc</b>				
<b>LABORATORY ANALYTICAL FACILITIES</b>				
Name of the Board / Committee: Central Laboratory Madhya Pradesh Pollution Control Board Bhopal M.P (CL MPPCB)				
<b>PART I: Facility available for monitoring of environmental parameters:</b>				
S. No.	Parameters	Facilities Available (Yes / No)	If facility is not available, Specify Timeline for addition of this parameter. (in months)	Action Taken for addition of this parameter (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. Sample Matrix / Group of Water and Wastewater</b>				
<b>(a) Physical Tests</b>				
1	Temperature	Yes		
2	Colour	Yes		
3	pH	Yes		
4	Turbidity	Yes		
5	Conductivity	Yes		
6	Total Solids	Yes		
7	Total Dissolved Solids (TDS)	Yes		
8	Total Suspended Solids (TSS)	Yes		
<b>(b) Inorganic Tests</b>				
<b>(i) General &amp; Non-metallic</b>				
1	Alkalinity	Yes		
2	Chloride	Yes		
3	Cyanide	No	12	Specification Finalized
4	Dissolved oxygen	Yes		
5	Nitrite nitrogen	Yes		
6	Nitrate nitrogen	Yes		

	7	Ammonical nitrogen	Yes		
	8	Fluoride	Yes		
	9	Hardness (Total)	Yes		
	10	Calcium	Yes		
	11	Magnesium	Yes		
	12	Phosphate	Yes		
	13	Sulphate	Yes		
	14	Sulphide	Yes		
	15	Total Residual chlorine (TRC)	Yes		
<b>(ii) Trace Metals Tests</b>					
	1	Aluminium (Al)	Yes		
	2	Arsenic (As) Total	Yes		
	3	Barium	Yes		
	4	Boron	Yes		
	5	Chromium (Cr) Hexavalent	Yes		
	6	Chromium (Cr) Total	Yes		
	7	Cadmium (Cd)	Yes		
	8	Cobalt (Co)	Yes		
	9	Copper (Cu)	Yes		
	10	Iron (Fe)	Yes		
	11	Lead (Pb)	Yes		
	12	Manganese (Mn)	Yes		
	13	Mercury (Hg)	Yes		
	14	Nickel (Ni)	Yes		
	15	Potassium (K)	Yes		
	16	Sodium (Na)	Yes		
	17	Vanadium (V)	Yes		
	18	Zinc (Zn)	Yes		
	19	Selenium (Se)	Yes		
<b>(c) Organics (General) and Trace Organics Tests</b>					

	1	Biological Oxygen Demand (BOD)	Yes		
	2	Chemical oxygen demand (COD)	Yes		
	3	Oil & Grease	Yes		
	4	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	Yes		
	5	Benzopyrene	Yes		
	<b>6</b>	<b>Pesticides</b>			
	<b>6.a</b>	<b>Organochlorine Pesticides (OCPs) Tests</b>			
	i	Aldrin	Yes		
	ii	Alpha Endosulphan	Yes		
	iii	p,p'-DDT	Yes		
	iv	Alpha-HCH	Yes		
	v	Beta HCH	Yes		
	vi	Beta Endosulphan	Yes		
	vii	Gama-HCH	Yes		
	viii	o,p'-DDT	Yes		
	ix	p,p'-DDE	Yes		
	<b>6.b</b>	<b>Organophosphorus Pesticides (OPPs) Tests</b>			
	i	Malathion	Yes		
	ii	Methyl parathion	Yes		
	iii	Chlorpyriphos	Yes		
	iv	Dimethoate			
	v	Dieldrin	Yes		
	vi	Ethion			
	<b>(d) Microbiological Tests</b>				
	1	Total Coliform	Yes		
	2	Faecal Coliform	Yes		
	3	E. Coli	Yes		
	4	Faecal Streptococci	Yes		
	<b>(e) Toxicological Tests</b>				
	1	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	Yes		
	<b>B. Sample Matrix / Group of Solid / Solid Waste</b>				
	<b>(a) Soil / Sediment / Compost Tests</b>				

	1	Cation Exchange Capacity (CEC)	Yes		
	2	Electrical Conductivity (EC)	Yes		
	3	Organic carbon (Chemical Method )	Yes		
	4	pH	Yes		
	5	Soil moisture	Yes		
	6	Total nitrogen	Yes		
	7	Metals by digestion (As, Cd, Cr, Pb, Ni etc.)	Yes		
<b>(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests</b>					
	1	Corrosivity	Yes		
	2	Ignitability (Flash Point)	Yes		
	3	Loss on Drying at 1050C (% Moisture Content)	Yes		
	4	Loss on Drying at 5500C (% Organic Content)	Yes		
	5	pH	Yes		
	6	Organic carbon/matter (Chemical Method )	Yes		
	7	Calorific Value	Yes		
	8	Toxicity Characteristics leaching procedure (TCLP) Leachate and Metals in Leachate (As,Cd,Cr, Pb, Ni)	Yes		
<b>C. Sample Matrix / Group of Analytes: Air</b>					
<b>(a) Ambient Air</b>					
	1	Nitrogen dioxide as NO2	Yes		
	2	Sulphur dioxide (SO2)	Yes		
	3	Particulate matter (PM10)	Yes		
	4	Particulate matter (PM2.5)	Yes		
	5	Carbon Monoxide	Yes		
	6	Ozone	Yes		
	7	Benzene	Yes		
	8	Ammonia	Yes		

	9	Metals in Particulate Matter, Pb	Yes		
	10	Metals in Particulate Matter, As	Yes		
	11	Metals in Particulate Matter, Ni	Yes		
	12	Particulate Benzo-a-Pyrene (BaP)	Yes		
<b>(b) Stack Gas / Stationary Source Emission</b>					
	1	Particulate Matter	Yes		
	2	Sulphur Dioxide	Yes		
	3	Carbon Dioxide	Yes		
	4	Carbon Monoxide (NDIR based Method)	Yes		
	5	Temperature	Yes		
	6	Moisture	Yes		
	7	Oxygen	Yes		
	8	Oxides of Nitrogen	Yes		
	9	Halides (HCL/HF)	Yes		
<b>(c) Noise Level</b>					
	1	Ambient Noise level measurement (20 to 140 dB)	Yes		
	2	Source Noise Level Measurement (Industrial process, DG set- 20 to 140dB)	Yes		
<b>(d) Meteorological Monitoring</b>					
	1	Ambient Temperature	Yes		
	2	Wind direction	Yes		
	3	Wind speed	Yes		
	4	Relative Humidity	Yes		
	5	Mixing Height	Yes		
Specific remarks, if any:					

PART II: Details of Laboratory Infrastructure (Instruments and Equipment)				
S. No.	Name of Instrument / Equipments	Available Yes / No	If the Instrument / Equipment is not available, Specify Timeline for procurement of this instrument (in months)	Action Taken for procurement of this Instrument / Equipment (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>				
<b>a ) Mandatory Requirements</b>				
1	Portable / Pen type pH meter / pH strip	Yes		
2	Portable Dissolved Oxygen Meter / Field Fixing using chemicals	Yes		
3	Electrical Conductivity meter pen type	Yes		
4	Flow meter / Physical flow measuring	Yes		
5	GPS / Mobile with GPS app	Yes		
6	Ice Box (2 nos.) (150 litre & 100 litre capacities)	Yes		
7	Thermometer	Yes		
8	Stainless steel bucket with nylon rope and mug	Yes		
9	Ground water level measuring device	No	12	Specification Finalized
10	Scoop / shovel	Yes		
11	Auger / core sampler	Yes		
<b>b) Optional Requirements</b>				
1	Bottom Sampler / Depth sampler	Yes		
2	Chloroscope for residual chlorine	Yes		
3	Vandorn or equivalent water sampler (Automatic sampler when composite sampling to be done)	Yes		

	4	Ekman Dredge	Yes		
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>					
<b>a) Mandatory Requirements</b>					
	1	Fine dust samplers PM2.5 (*4 Nos)	Yes		
	2	Respirable Dust Sampler PM 10 (* 4 Nos)	Yes		
	3	High Volume Sampler ( SPM ) (4 Nos)	No	12	Specification Finalized
	4	Handy Sampler with set of glass impingers (*2 Nos)	Yes		
	5	Low Volume Sampler (LVS)	Yes		
	6	Tedler bags different sizes	Yes		
	7	Meteorological tower (All in one telescopic Mast) with sensors comprising wind speed, wind direction, ambient temp., Relative humidity, Solar radiation, rainfall etc.	Yes		
	8	Nitrogen Cylinder portable	No	12	Specification Finalized
	9	Activated Charcoal tubes/ Tenex	No	12	Specification Finalized
	10	Barometer (Digital)	Yes		
	11	Isokinetic Stack Monitoring Kit complete with Stack monitoring instrument panel with inclined cum vertical manometer, Cold Box, Vacuum pump, Glass assembly impingers	Yes		
	12	Modified S type Stainless steel Pitot tube (Standard length) with Assembly	Yes		
	13	Monoblock type, rotary design vacuum pump	Yes		
	14	Orsat Apparatus	No	12	Specification Finalized

	15	Source emission monitoring Impingers train set with spare impingers 100 ml & 225 ml capacity	Yes		
	16	Stainless steel heated Sampling Probes with thimble holders short and long	Yes		
	17	Flue Gas analyzer	Yes		
	18	Thermometer/ Thermocouple	Yes		
	19	Calibrator for Noise Meters	Yes		
	20	Digital Sound level ( Noise ) Metres	Yes		
	21	Portable TOC Analyzer for emission monitoring.	No	12	Specification Finalized
	22	Polyurethane Foam PUF Sampler	No	12	Specification Finalized
<b>b) Optional Requirements</b>					
	1	Anemometer	Yes		
	2	Weather Monitoring system	Yes		
	3	Wind speed/wind direction monitor	Yes		
	4	Continuous Ambient Air Monitoring System, Fixed	Yes		
	5	Continuous PM10 Analyzer	Yes		
	6	Continuous Ambient Air Monitoring System, Mobile	Yes		
	7	Continuous PM2.5 analyzer	Yes		
	8	Ambient Nitrogen Oxides (NO-NO2- NOx Analyzer	Yes		
	9	Ambient Ozone Analyzer	Yes		
	10	Ambient BTEX Analyzer	Yes		
	11	Multipoint Gas Calibration system	Yes		
	12	Ambient Sulphur Dioxide analyzer	Yes		
	13	Ambient Carbon Monoxide & Carbon dioxide analyzer	Yes		
	14	Total Hydrocarbon analyzer	Yes		

	15	Ambient Ammonia analyzer	Yes		
	16	Zero Gas Generator	No	12	Specification Finalized
	17	Synthetic Air Cylinder	No	12	Specification Finalized
	18	Calibration Gas Cylinders, SO <sub>2</sub> , NO, CO, NH <sub>3</sub> , Benzene and Toluene One each with stainless steel Regulators	No	12	Specification Finalized
	19	Continuous emission monitoring equipment	Yes		
	20	19 inch Rack mounting system for air analyzers	No		
	21	Dry Gas Meter	Yes		
	22	Diesel Exhaust analyzer	Yes		
	23	Exhaust CO/HC analyzer with Sampling Probe	Yes		
	24	Automated Noise Monitoring System	Yes		
	25	Integrating Sound level meter	Yes		
	26	Continuous PM <sub>10</sub> & PM <sub>2.5</sub> Monitoring Analyzer TEOM system	Yes		
	27	Top loading orifice kit for calibration of HVS	No	12	Specification Finalized
	28	Permeation tubes (SO <sub>2</sub> , NO-NO <sub>2</sub> -NO <sub>x</sub> , NH <sub>3</sub> , BTX)	No	12	Specification Finalized
<b>C. List of Equipment required for processing of Environmental Samples:</b>					
<b>a) Mandatory Requirements</b>					
	1	Accelerated Solvent Extraction (ASE) System	Yes		
	2	Ammonia distillation assembly/TKN Analyzer	Yes		
	3	Analytical Balance 4/5 digit & 6 digit (Digital)	Yes		

	4	Aquarium for Toxicity bioassay test with complete accessories (*4 Nos)	Yes		
	5	Autoclave (*2 Nos)	Yes		
	6	Bacteriological Incubators Stainless steel (*2 Nos)	Yes		
	7	Bio safety cabinets	Yes		
	8	BOD Incubators (2 nos.)	Yes		
	9	Centrifuge	Yes		
	10	COD Digestion heated Blocks (2) with capacity 16 nos. or more	Yes		
	11	Cyanide Distillation Assembly (3)	No	12	Specification Finalized
	12	Deep Freezer- Capacity 500 litre	Yes		
	13	Laboratory Ball Mill Grinder	Yes		
	14	Laboratory Grinder	Yes		
	15	Laminar Flow bench for Microbiological analysis	Yes		
	16	Magnetic Stirrer with heating system (*2 Nos)	No	12	Specification Finalized
	17	Mechanical Shaker	Yes		
	18	Membrane Filtration assembly with vacuum pump (2 nos.)	Yes		
	19	Microbial culture refrigerator	Yes		
	20	Microwave Digester with 16 vessels/ Hot Plate	Yes		
	21	Muffle Furnace (*1 Nos), Range 1200 C	Yes		
	22	Phenol distillation assembly (3)	No	12	Specification Finalized
	23	Plate counter, Manual/Automatic	Yes		
	24	Digestion Chambers/ Fume hood	Yes		
	25	Digital Thermometer & Humidity meter- All lab area	Yes		
	26	Dispensers (Various capacities ) up to 5, 10, 25 & 50 ml	Yes		

	27	Filtration Assembly with vacuum pump	Yes		
	28	Fluoride Distillation Assembly (3)	No	12	Specification Finalized
	29	Arsenic / Fluoride Glass Distillation assemblies	No	12	Specification Finalized
	30	Glass Double Distillation Assembly /Water Purification System	Yes		
	31	Heating mantles (2 nos.)	Yes		
	32	Hot plates (small, Medium and Large ) (*2 nos.)	Yes		
	33	Thermo Hygrometer	Yes		
	34	Imhoff Cone	Yes		
	35	Top loading Precision Digital Balance (minimum detection 0.001mg/0.01 mg) with anti-vibration facility- 3 nos. i.e 4/5 Digit (2 nos), - 6 Digit (1 no)	Yes		
	36	Refrigerators Big Size 300 litres or more, double door- 2 nos.	Yes		
	37	Rotary Evaporator (Buchi type) with water recirculating chiller	Yes		
	38	Separating funnel shaker	Yes		
	39	Soxhlet Apparatus	Yes		
	40	Solid Phase Extraction (SPE) /SPME Extraction system	Yes		
	41	Thermometer (Alcohol)	Yes		
	42	Dry & wet bulb Thermometer	Yes		
	43	Toxicity characteristic leaching procedure (TCLP) Extractors (Zero head and Bottle)	Yes		
	44	Ultra sonic water bath- Capacity 3 litre	Yes		

	45	Water Bath with temperature control (*2 Nos)	Yes		
	46	Water Bath with temp. for mercury sample digestion- 20 BOD Bottles	Yes		
<b>D. Analytical Instruments at Environmental Laboratories</b>					
<b>a) Mandatory Requirements</b>					
	1	Atomic Absorption spectrometer (AAS)- Flame, Hydride & Graphite Tube Atomizer (GTA)	Yes		
	2	Binocular Stereo Zoom Microscope	Yes		
	3	Bomb Calorimeter	Yes		
	4	BTX Analyzer with BTX calibrator	Yes		
	5	Colony counter	Yes		
	6	Conductivity meter- 2 nos.	Yes		
	7	Environment conditioning chamber			
	8	Digital Burettes- 50 ml*2, 100 ml*2	Yes		
	9	Dissolved Oxygen Meter (Bench model)	Yes		
	10	Flame Photometer	Yes		
	11	Flash Point Apparatus	Yes		
	12	Gas Chromatograph Mass Spectrometer	Yes		
	13	High Performance Liquid Chromatograph (HPLC)	Yes		
	14	Inductively Coupled Plasma (ICP) Spectrometer-OES			
	15	Ion Chromatograph Anion & Cations	No	12	Specification Finalized
	16	Methane and Non Methane (NMHC) Analyzer	Yes		
	17	Microscope – 100x	Yes		
	18	Microscope Binocular Research	Yes		
	19	CO (NDIR based) Analyzer	Yes		

	20	Nephelometer (Turbidity Meter)	Yes		
	21	pH-Meter with combined electrode (3 point)- 2 nos.	Yes		
	22	Specific ion Analyzer with ion selective electrodes	No	12	Specification Finalized
	23	Spectrophotometer Visible (Portable)	No	12	Specification Finalized
	24	TKN Analyzer semi-automatic with aluminum block digester	Yes		
	25	UV-Vis Spectrophotometer	Yes		
	26	Moisture Content Analyzer	Yes		
<b>b) Optional Requirements</b>					
	1	Automatic Titration Assembly	Yes		
	2	Carbon, Hydrogen, Nitrogen and Sulphur (CHNS) Elemental Analyzer	Yes		
	3	EDXRF Analyzer/WDXRF Analyzer	No	12	Specification Finalized
	4	Fourier-transform infrared Spectrometer (FTIR)			
	5	Flocculator ( Jar testing apparatus)	Yes		
	6	Toxic Gas Analyzer	Yes		
	7	Organic Halogen (AOX/TOX) Analyzer			
	8	TOC Analyzer	No		
	9	High Resolution Mass Spectrometer (HRGC-HRMS)			
	10	Inductively Coupled Plasma Mass (ICP-MS) Spectrometer	Yes		
	11	X Ray Fluorescence (XRF) Spectrometer (Portable)			

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PART I: Facility available for monitoring of environmental parameters:				
Parameters	Total Number of Parameters	Facility available for	Facility not available for	
<b>A. Sample Matrix / Group of Water and Wastewater</b>	<b>67</b>	<b>64</b>	<b>1</b>	<b>2</b>
(a) Physical Tests	8	8	0	0
(b) Inorganic Tests	<b>34</b>	<b>33</b>	<b>1</b>	<b>0</b>
(i) General & Non-metallic	15	14	1	0
(ii) Trace Metals Tests	19	19	0	0
(c) Organics (General) and Trace Organics Tests	<b>20</b>	<b>18</b>	<b>0</b>	<b>2</b>
Pesticides	15	13	0	2
Organochlorine Pesticides (OCPs) Tests	9	9	0	0
Organophosphorus Pesticides (OPPs) Tests	6	4	0	2
(d) Microbiological Tests	<b>4</b>	<b>4</b>	<b>0</b>	<b>0</b>
(e) Toxicological Tests	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>	<b>15</b>	<b>15</b>	<b>0</b>	<b>0</b>
(a) Soil / Sediment / Compost Tests	7	7	0	0
(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests	8	8	0	0
<b>C. Sample Matrix / Group of Analytes: Air</b>	<b>28</b>	<b>28</b>	<b>0</b>	<b>0</b>
(a) Ambient Air	12	12	0	0
(b) Stack Gas / Stationary Source Emission	9	9	0	0
(c) Noise Level	2	2	0	0
(d) Meteorological Monitoring	5	5	0	0
<b>PART II: Details of Laboratory Infrastructure (Instruments and Equipment)</b>				
Name of Instrument / Equipments	Total Numbers	Number of Available	Number of Not Available	
<b>Total</b>	<b>148</b>	<b>119</b>	<b>23</b>	<b>6</b>
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>	<b>15</b>	<b>14</b>	<b>1</b>	<b>0</b>
a) Mandatory Requirements	11	10	1	0
b) Optional Requirements	4	4	0	0
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>	<b>50</b>	<b>38</b>	<b>12</b>	<b>0</b>
a) Mandatory Requirements	22	16	6	0
b) Optional Requirements	28	22	6	0
<b>C. List of Equipment required for processing of Environmental Samples:</b>	<b>46</b>	<b>41</b>	<b>5</b>	<b>0</b>
a) Mandatory Requirements	46	41	5	0
<b>D. Analytical Instruments at Environmental Laboratories</b>	<b>37</b>	<b>26</b>	<b>5</b>	<b>0</b>
a) Mandatory Requirements	26	21	3	2
b) Optional Requirements	11	5	2	4

**Note: It is requested to please ensure that each sheet is created separately for each laboratory and rename the sheet accordingly . For e.g. Central Laboratory, Regional Laboratory etc**

**LABORATORY ANALYTICAL FACILITIES**

**Name of the Board / Committee: Regional Laboratory Mandideep, Madhya Pradesh Pollution Control Board M.P (RO Mandideep)**

**PART I: Facility available for monitoring of environmental parameters:**

S. No.	Parameters	Facilities Available (Yes / No)	If facility is not available, Specify Timeline for addition of this parameter. (in months)	Action Taken for addition of this parameter (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. Sample Matrix / Group of Water and Wastewater</b>				
<b>(a) Physical Tests</b>				
1	Temperature	Yes		
2	Colour	Yes		
3	pH	Yes		
4	Turbidity	Yes		
5	Conductivity	Yes		
6	Total Solids	Yes		
7	Total Dissolved Solids (TDS)	Yes		
8	Total Suspended Solids (TSS)	Yes		
<b>(b) Inorganic Tests</b>				
<b>(i) General &amp; Non-metallic</b>				
1	Alkalinity	Yes		
2	Chloride	Yes		
3	Cyanide	No		
4	Dissolved oxygen	Yes		
5	Nitrite nitrogen	Yes		
6	Nitrate nitrogen	Yes		

	7	Ammonical nitrogen	Yes			
	8	Fluoride	Yes			
	9	Hardness (Total)	Yes			
	10	Calcium	Yes			
	11	Magnesium	Yes			
	12	Phosphate	Yes			
	13	Sulphate	Yes			
	14	Sulphide	No			
	15	Total Residual chlorine (TRC)	Yes			
<b>(ii) Trace Metals Tests</b>						
	1	Aluminium (Al)	No			
	2	Arsenic (As) Total	No			
	3	Barium	No			
	4	Boron	No			
	5	Chromium (Cr) Hexavalent	No			
	6	Chromium (Cr) Total	No			
	7	Cadmium (Cd)	No			
	8	Cobalt (Co)	No			
	9	Copper (Cu)	No			
	10	Iron (Fe)	No			
	11	Lead (Pb)	No			
	12	Manganese (Mn)	No			
	13	Mercury (Hg)	No			
	14	Nickel (Ni)	No			
	15	Potassium (K)	No			
	16	Sodium (Na)	No			
	17	Vanadium (V)	No			
	18	Zinc (Zn)	No			
	19	Selenium (Se)	No			
<b>(c) Organics (General) and Trace Organics Tests</b>						

Samples are sent  
to Central  
Laboratory Bhopal

	1	Biological Oxygen Demand (BOD)	Yes				
	2	Chemical oxygen demand (COD)	Yes				
	3	Oil & Grease	No			Samples are sent to Central Laboratory Bhopal	
	4	Phenolic Compounds as C6H5OH	No				
	5	Benzopyrene	No				
	6	<b>Pesticides</b>					
	6.a	<b>Organochlorine Pesticides (OCPs) Tests</b>					
	i	Aldrin	No			Samples are sent to Central Laboratory Bhopal	
	ii	Alpha Endosulphan	No				
	iii	p,p'-DDT	No				
	iv	Alpha-HCH	No				
	v	Beta HCH	No				
	vi	Beta Endosulphan	No				
	vii	Gama-HCH	No				
	viii	o,p'-DDT	No				
	ix	p,p'-DDE	No				
	6.b	<b>Organophosphorus Pesticides (OPPs) Tests</b>					
	i	Malathion	No				
	ii	Methyl parathion	No				
	iii	Chlorpyriphos	No				
	iv	Dimethoate	No				
	v	Dieldrin	No				
	vi	Ethion	No				
	<b>(d) Microbiological Tests</b>						
	1	Total Coliform	Yes				
	2	Faecal Coliform	Yes				
	3	E. Coli	No			Samples are sent to Central Laboratory Bhopal	
	4	Faecal Streptococci	No				
	<b>(e) Toxicological Tests</b>						
	1	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	Yes				
	<b>B. Sample Matrix / Group of Solid / Solid Waste</b>						
	<b>(a) Soil / Sediment / Compost Tests</b>						

	1	Cation Exchange Capacity (CEC)	No			Samples are sent to Central Laboratory Bhopal	
	2	Electrical Conductivity (EC)	No				
	3	Organic carbon (Chemical Method )	No				
	4	pH	No				
	5	Soil moisture	No				
	6	Total nitrogen	No				
	7	Metals by digestion (As, Cd, Cr, Pb, Ni etc.)	No				
<b>(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests</b>							
	1	Corrosivity	No				
	2	Ignitability (Flash Point)	No				
	3	Loss on Drying at 1050C (% Moisture Content)	No				
	4	Loss on Drying at 5500C (% Organic Content)	No				
	5	pH	No				
	6	Organic carbon/matter (Chemical Method )	No				
	7	Calorific Value	No				
	8	Toxicity Characteristics leaching procedure (TCLP) Leachate and Metals in Leachate (As,Cd,Cr, Pb, Ni)	No				
<b>C. Sample Matrix / Group of Analytes: Air</b>							
<b>(a) Ambient Air</b>							
	1	Nitrogen dioxide as NO2	Yes				
	2	Sulphur dioxide (SO2)	Yes				
	3	Particulate matter (PM10)	Yes				
	4	Particulate matter (PM2.5)	Yes				
	5	Carbon Monoxide	Yes				
	6	Ozone	Yes				
	7	Benzene	Yes				
	8	Ammonia	Yes				



PART II: Details of Laboratory Infrastructure (Instruments and Equipment)					
S. No.	Name of Instrument / Equipments	Available Yes / No	If the Instrument / Equipment is not available, Specify Timeline for procurement of this instrument (in months)	Action Taken for procurement of this Instrument / Equipment (Specification finalized / procurement initiated / work awarded / outsourced )	
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>					
<b>a ) Mandatory Requirements</b>					
1	Portable / Pen type pH meter / pH strip	Yes			
2	Portable Dissolved Oxygen Meter / Field Fixing using chemicals	No			
3	Electrical Conductivity meter pen type	No			
4	Flow meter / Physical flow measuring	No			
5	GPS / Mobile with GPS app	Yes			
6	Ice Box (2 nos.) (150 litre & 100 litre capacities)	Yes			
7	Thermometer	Yes			
8	Stainless steel bucket with nylon rope and mug	Yes			
9	Ground water level measuring device	No			
10	Scoop / shovel	Yes			
11	Auger / core sampler	Yes			
<b>b) Optional Requirements</b>					
1	Bottom Sampler / Depth sampler	No			
2	Chloroscope for residual chlorine	No			
3	Vandorn or equivalent water sampler (Automatic sampler when composite sampling to be done)	No			

	4	Ekman Dredge	No			
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>						
<b>a) Mandatory Requirements</b>						
	1	Fine dust samplers PM2.5 (*4 Nos)	Yes			
	2	Respirable Dust Sampler PM 10 (* 4 Nos)	Yes			
	3	High Volume Sampler ( SPM ) (4 Nos)	Yes			
	4	Handy Sampler with set of glass impingers (*2 Nos)	No			
	5	Low Volume Sampler (LVS)	No			
	6	Tedler bags different sizes	No			
	7	Meteorological tower (All in one telescopic Mast) with sensors comprising wind speed, wind direction, ambient temp., Relative humidity, Solar radiation, rainfall etc.	Yes			
	8	Nitrogen Cylinder portable	No			
	9	Activated Charcoal tubes/ Tenex	No			
	10	Barometer (Digital)	No			
	11	Isokinetic Stack Monitoring Kit complete with Stack monitoring instrument panel with inclined cum vertical manometer, Cold Box, Vacuum pump, Glass assembly impingers	Yes			
	12	Modified S type Stainless steel Pitot tube (Standard length) with Assembly	Yes			
	13	Monoblock type, rotary design vacuum pump	Yes			
	14	Orsat Apparatus	No			

	15	Source emission monitoring Impingers train set with spare impingers 100 ml & 225 ml capacity	Yes			
	16	Stainless steel heated Sampling Probes with thimble holders short and long	Yes			
	17	Flue Gas analyzer	No			
	18	Thermometer/ Thermocouple	Yes			
	19	Calibrator for Noise Meters	Yes			
	20	Digital Sound level ( Noise ) Metres	Yes			
	21	Portable TOC Analyzer for emission monitoring.	No			
	22	Polyurethane Foam PUF Sampler	No			
<b>b) Optional Requirements</b>						
	1	Anemometer	No			
	2	Weather Monitoring system	Yes			
	3	Wind speed/wind direction monitor	Yes			
	4	Continuous Ambient Air Monitoring System, Fixed	Yes			
	5	Continuous PM10 Analyzer	Yes			
	6	Continuous Ambient Air Monitoring System, Mobile	No			
	7	Continuous PM2.5 analyzer	Yes			
	8	Ambient Nitrogen Oxides (NO-NO2- NOx Analyzer	Yes			
	9	Ambient Ozone Analyzer	Yes			
	10	Ambient BTEX Analyzer	Yes			
	11	Multipoint Gas Calibration system	Yes			
	12	Ambient Sulphur Dioxide analyzer	Yes			
	13	Ambient Carbon Monoxide & Carbon dioxide analyzer	Yes			
	14	Total Hydrocarbon analyzer	No			

	15	Ambient Ammonia analyzer	Yes			
	16	Zero Gas Generator	Yes			
	17	Synthetic Air Cylinder	Yes			
	18	Calibration Gas Cylinders, SO <sub>2</sub> , NO, CO, NH <sub>3</sub> , Benzene and Toluene One each with stainless steel Regulators	Yes			
	19	Continuous emission monitoring equipment	No			
	20	19 inch Rack mounting system for air analyzers	No			
	21	Dry Gas Meter	No			
	22	Diesel Exhaust analyzer	No			
	23	Exhaust CO/HC analyzer with Sampling Probe	No			
	24	Automated Noise Monitoring System	No			
	25	Integrating Sound level meter	No			
	26	Continuous PM <sub>10</sub> & PM <sub>2.5</sub> Monitoring Analyzer TEOM system	No			
	27	Top loading orifice kit for calibration of HVS	No			
	28	Permeation tubes (SO <sub>2</sub> , NO-NO <sub>2</sub> -NO <sub>x</sub> , NH <sub>3</sub> , BTX)	No			
<b>C. List of Equipment required for processing of Environmental Samples:</b>						
<b>a) Mandatory Requirements</b>						
	1	Accelerated Solvent Extraction (ASE) System	No			
	2	Ammonia distillation assembly/TKN Analyzer	Yes			
	3	Analytical Balance 4/5 digit & 6 digit (Digital)	Yes			

	4	Aquarium for Toxicity bioassay test with complete accessories (*4 Nos)	Yes			
	5	Autoclave (*2 Nos)	Yes			
	6	Bacteriological Incubators Stainless steel (*2 Nos)	Yes			
	7	Bio safety cabinets	Yes			
	8	BOD Incubators (2 nos.)	Yes			
	9	Centrifuge	Yes			
	10	COD Digestion heated Blocks (2) with capacity 16 nos. or more	Yes			
	11	Cyanide Distillation Assembly (3)	No			
	12	Deep Freezer- Capacity 500 litre	No			
	13	Laboratory Ball Mill Grinder	No			
	14	Laboratory Grinder	No			
	15	Laminar Flow bench for Microbiological analysis	Yes			
	16	Magnetic Stirrer with heating system (*2 Nos)	No			
	17	Mechanical Shaker	No			
	18	Membrane Filtration assembly with vacuum pump (2 nos.)	No			
	19	Microbial culture refrigerator	No			
	20	Microwave Digester with 16 vessels/ Hot Plate	Yes			
	21	Muffle Furnace (*1 Nos), Range 1200 C	Yes			
	22	Phenol distillation assembly (3)	No			
	23	Plate counter, Manual/Automatic	Yes			
	24	Digestion Chambers/ Fume hood	Yes			
	25	Digital Thermometer & Humidity meter- All lab area	No			
	26	Dispensers (Various capacities ) up to 5, 10, 25 & 50 ml	No			

	27	Filtration Assembly with vacuum pump	No			
	28	Fluoride Distillation Assembly (3)	No			
	29	Arsenic / Fluoride Glass Distillation assemblies	No			
	30	Glass Double Distillation Assembly /Water Purification System	No			
	31	Heating mantles (2 nos.)	No			
	32	Hot plates (small, Medium and Large ) (*2 nos.)	No			
	33	Thermo Hygrometer	No			
	34	Imhoff Cone	No			
	35	Top loading Precision Digital Balance (minimum detection 0.001mg/0.01 mg) with anti-vibration facility- 3 nos. i.e 4/5 Digit (2 nos), - 6 Digit (1 no)	Yes			
	36	Refrigerators Big Size 300 litres or more, double door- 2 nos.	No			
	37	Rotary Evaporator (Buchi type) with water recirculating chiller	No			
	38	Separating funnel shaker	No			
	39	Soxhlet Apparatus	Yes			
	40	Solid Phase Extraction (SPE) /SPME Extraction system	No			
	41	Thermometer (Alcohol)	No			
	42	Dry & wet bulb Thermometer	Yes			
	43	Toxicity characteristic leaching procedure (TCLP) Extractors (Zero head and Bottle)	No			
	44	Ultra sonic water bath- Capacity 3 litre	No			

	45	Water Bath with temperature control (*2 Nos)	No			
	46	Water Bath with temp. for mercury sample digestion- 20 BOD Bottles	No			
<b>D. Analytical Instruments at Environmental Laboratories</b>						
<b>a) Mandatory Requirements</b>						
	1	Atomic Absorption spectrometer (AAS)- Flame, Hydride & Graphite Tube Atomizer (GTA)	No			
	2	Binocular Stereo Zoom Microscope	No			
	3	Bomb Calorimeter	No			
	4	BTX Analyzer with BTX calibrator	No			
	5	Colony counter	No			
	6	Conductivity meter- 2 nos.	No			
	7	Environment conditioning chamber	No			
	8	Digital Burettes- 50 ml*2, 100 ml*2	No			
	9	Dissolved Oxygen Meter (Bench model)	No			
	10	Flame Photometer	Yes			
	11	Flash Point Apparatus	No			
	12	Gas Chromatograph Mass Spectrometer	No			
	13	High Performance Liquid Chromatograph (HPLC)	No			
	14	Inductively Coupled Plasma (ICP) Spectrometer-OES	No			
	15	Ion Chromatograph Anion & Cations	No			
	16	Methane and Non Methane (NMHC) Analyzer	No			
	17	Microscope – 100x	No			
	18	Microscope Binocular Research	No			
	19	CO (NDIR based) Analyzer	Yes			

	20	Nephelometer (Turbidity Meter)	Yes			
	21	pH-Meter with combined electrode (3 point)- 2 nos.	Yes			
	22	Specific ion Analyzer with ion selective electrodes	No			
	23	Spectrophotometer Visible (Portable)	No			
	24	TKN Analyzer semi-automatic with aluminum block digester	Yes			
	25	UV-Vis Spectrophotometer	Yes			
	26	Moisture Content Analyzer	No			
<b>b) Optional Requirements</b>						
	1	Automatic Titration Assembly	No			
	2	Carbon, Hydrogen, Nitrogen and Sulphur (CHNS) Elemental Analyzer	No			
	3	EDXRF Analyzer/WDXRF Analyzer	No			
	4	Fourier-transform infrared Spectrometer (FTIR)	No			
	5	Flocculator ( Jar testing apparatus)	No			
	6	Toxic Gas Analyzer	No			
	7	Organic Halogen (AOX/TOX) Analyzer	No			
	8	TOC Analyzer	No			
	9	High Resolution Mass Spectrometer (HRGC-HRMS)	No			
	10	Inductively Coupled Plasma Mass (ICP-MS) Spectrometer	No			
	11	X Ray Fluorescence (XRF) Spectrometer (Portable)	No			

<b>PART I: Facility available for monitoring of environmental parameters:</b>				
Parameters	Total Number of Parameters	Facility available for	Facility not available for	
<b>A. Sample Matrix / Group of Water and Wastewater</b>	<b>67</b>	<b>26</b>	<b>41</b>	<b>0</b>
(a) Physical Tests	8	8	0	0
(b) Inorganic Tests	<b>34</b>	<b>13</b>	<b>21</b>	
(i) General & Non-metallic	15	13	2	0
(ii) Trace Metals Tests	19	0	19	0
(c) Organics (General) and Trace Organics Tests	<b>20</b>	<b>2</b>	<b>18</b>	<b>0</b>
Pesticides	15	0	15	0
Organochlorine Pesticides (OCPs) Tests	9	0	9	0
Organophosphorus Pesticides (OPPs) Tests	6	0	6	0
(d) Microbiological Tests	<b>4</b>	<b>2</b>	<b>2</b>	<b>0</b>
(e) Toxicological Tests	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>	<b>15</b>	<b>0</b>	<b>15</b>	
(a) Soil / Sediment / Compost Tests	7	0	7	0
(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests	8	0	8	0
<b>C. Sample Matrix / Group of Analytes: Air</b>	<b>28</b>	<b>20</b>	<b>8</b>	
(a) Ambient Air	12	8	4	0
(b) Stack Gas / Stationary Source Emission	9	5	4	0
(c) Noise Level	2	2	0	0
(d) Meteorological Monitoring	5	5	0	0
<b>PART II: Details of Laboratory Infrastructure (Instruments and Equipment)</b>				
Name of Instrument / Equipments	Total Numbers	Number of Available	Number of Not Available	
<b>Total</b>	<b>148</b>	<b>57</b>	<b>91</b>	<b>0</b>
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>	<b>15</b>	<b>7</b>	<b>8</b>	
a ) Mandatory Requirements	11	7	4	0
b) Optional Requirements	4	0	4	0
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>	<b>50</b>	<b>27</b>	<b>23</b>	
a) Mandatory Requirements	22	12	10	0
b) Optional Requirements	28	15	13	0
<b>C. List of Equipment required for processing of Environmental Samples:</b>	<b>46</b>	<b>17</b>	<b>29</b>	
a) Mandatory Requirements	46	17	29	0
<b>D. Analytical Instruments at Environmental Laboratories</b>	<b>37</b>	<b>6</b>	<b>31</b>	
a) Mandatory Requirements	26	6	20	0
b) Optional Requirements	11	0	11	0

**Note: It is requested to please ensure that each sheet is created separately for each laboratory and rename the sheet accordingly . For e.g. Central Laboratory, Regional Laboratory etc**

**LABORATORY ANALYTICAL FACILITIES**

**Name of the Board / Committee: Regional Laboratory Gwalior, Madhya Pradesh Pollution Control Board M.P (RO Gwalior)**

**PART I: Facility available for monitoring of environmental parameters:**

S. No.	Parameters	Facilities Available (Yes / No)	If facility is not available, Specify Timeline for addition of this parameter. (in months)	Action Taken for addition of this parameter (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. Sample Matrix / Group of Water and Wastewater</b>				
<b>(a) Physical Tests</b>				
1	Temperature	Yes		
2	Colour	Yes		
3	pH	Yes		
4	Turbidity	Yes		
5	Conductivity	Yes		
6	Total Solids	Yes		
7	Total Dissolved Solids (TDS)	Yes		
8	Total Suspended Solids (TSS)	Yes		
<b>(b) Inorganic Tests</b>				
<b>(i) General &amp; Non-metallic</b>				
1	Alkalinity	Yes		
2	Chloride	Yes		
3	Cyanide	No		
4	Dissolved oxygen	Yes		
5	Nitrite nitrogen	Yes		
6	Nitrate nitrogen	Yes		

	7	Ammonical nitrogen	Yes			
	8	Fluoride	Yes			
	9	Hardness (Total)	Yes			
	10	Calcium	Yes			
	11	Magnesium	Yes			
	12	Phosphate	Yes			
	13	Sulphate	Yes			
	14	Sulphide	No			
	15	Total Residual chlorine (TRC)	No			
<b>(ii) Trace Metals Tests</b>						
	1	Aluminium (Al)	No			
	2	Arsenic (As) Total	No			
	3	Barium	No			
	4	Boron	No			
	5	Chromium (Cr) Hexavalent	No			
	6	Chromium (Cr) Total	No			
	7	Cadmium (Cd)	No			
	8	Cobalt (Co)	No			
	9	Copper (Cu)	No			
	10	Iron (Fe)	No			
	11	Lead (Pb)	No			
	12	Manganese (Mn)	No			
	13	Mercury (Hg)	No			
	14	Nickel (Ni)	No			
	15	Potassium (K)	Yes			
	16	Sodium (Na)	Yes			
	17	Vanadium (V)	No			
	18	Zinc (Zn)	No			
	19	Selenium (Se)	No			
<b>(c) Organics (General) and Trace Organics Tests</b>						

Samples are sent  
to Central  
Laboratory Bhopal

	1	Biological Oxygen Demand (BOD)	Yes				
	2	Chemical oxygen demand (COD)	Yes				
	3	Oil & Grease	Yes			Samples are sent to Central Laboratory Bhopal	
	4	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	No				
	5	Benzopyrene	No			Samples are sent to Central Laboratory Bhopal	
	6	<b>Pesticides</b>					
	6.a	<b>Organochlorine Pesticides (OCPs) Tests</b>					
	i	Aldrin	No				
	ii	Alpha Endosulphan	No				
	iii	p,p'-DDT	No				
	iv	Alpha-HCH	No				
	v	Beta HCH	No				
	vi	Beta Endosulphan	No				
	vii	Gama-HCH	No				
	viii	o,p'-DDT	No				
	ix	p,p'-DDE	No				
	6.b	<b>Organophosphorus Pesticides (OPPs) Tests</b>					
	i	Malathion	No				
	ii	Methyl parathion	No				
	iii	Chlorpyriphos	No				
	iv	Dimethoate	No				
	v	Dieldrin	No				
	vi	Ethion	No				
	<b>(d) Microbiological Tests</b>						
	1	Total Coliform	Yes				
	2	Faecal Coliform	Yes				
	3	E. Coli	Yes			Samples are sent to Central Laboratory Bhopal	
	4	Faecal Streptococci	Yes				
	<b>(e) Toxicological Tests</b>						
	1	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	No				
	<b>B. Sample Matrix / Group of Solid / Solid Waste</b>						
	<b>(a) Soil / Sediment / Compost Tests</b>						

	1	Cation Exchange Capacity (CEC)	No			Samples are sent to Central Laboratory Bhopal	
	2	Electrical Conductivity (EC)	No				
	3	Organic carbon (Chemical Method )	No				
	4	pH	No				
	5	Soil moisture	No				
	6	Total nitrogen	No				
	7	Metals by digestion (As, Cd, Cr, Pb, Ni etc.)	No				
<b>(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests</b>							
	1	Corrosivity	No				
	2	Ignitability (Flash Point)	No				
	3	Loss on Drying at 1050C (% Moisture Content)	No				
	4	Loss on Drying at 5500C (% Organic Content)	No				
	5	pH	No				
	6	Organic carbon/matter (Chemical Method )	No				
	7	Calorific Value	No				
	8	Toxicity Characteristics leaching procedure (TCLP) Leachate and Metals in Leachate (As,Cd,Cr, Pb, Ni)	No				
<b>C. Sample Matrix / Group of Analytes: Air</b>							
<b>(a) Ambient Air</b>							
	1	Nitrogen dioxide as NO2	Yes				
	2	Sulphur dioxide (SO2)	Yes				
	3	Particulate matter (PM10)	Yes				
	4	Particulate matter (PM2.5)	Yes				
	5	Carbon Monoxide	No				
	6	Ozone	No				
	7	Benzene	No				
	8	Ammonia	No				



PART II: Details of Laboratory Infrastructure (Instruments and Equipment)					
S. No.	Name of Instrument / Equipments	Available Yes / No	If the Instrument / Equipment is not available, Specify Timeline for procurement of this instrument (in months)	Action Taken for procurement of this Instrument / Equipment (Specification finalized / procurement initiated / work awarded / outsourced )	
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>					
<b>a ) Mandatory Requirements</b>					
1	Portable / Pen type pH meter / pH strip	Yes			
2	Portable Dissolved Oxygen Meter / Field Fixing using chemicals	No			
3	Electrical Conductivity meter pen type	No			
4	Flow meter / Physical flow measuring	No			
5	GPS / Mobile with GPS app	Yes			
6	Ice Box (2 nos.) (150 litre & 100 litre capacities)	Yes			
7	Thermometer	Yes			
8	Stainless steel bucket with nylon rope and mug	Yes			
9	Ground water level measuring device	No			
10	Scoop / shovel	No			
11	Auger / core sampler	Yes			
<b>b) Optional Requirements</b>					
1	Bottom Sampler / Depth sampler	No			
2	Chloroscope for residual chlorine	No			
3	Vandorn or equivalent water sampler (Automatic sampler when composite sampling to be done)	No			

	4	Ekman Dredge	No			
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>						
<b>a) Mandatory Requirements</b>						
	1	Fine dust samplers PM2.5 (*4 Nos)	Yes			
	2	Respirable Dust Sampler PM 10 (* 4 Nos)	Yes			
	3	High Volume Sampler ( SPM ) (4 Nos)	Yes			
	4	Handy Sampler with set of glass impingers (*2 Nos)	No			
	5	Low Volume Sampler (LVS)	No			
	6	Tedler bags different sizes	No			
	7	Meteorological tower (All in one telescopic Mast) with sensors comprising wind speed, wind direction, ambient temp., Relative humidity, Solar radiation, rainfall etc.	No			
	8	Nitrogen Cylinder portable	No			
	9	Activated Charcoal tubes/ Tenex	No			
	10	Barometer (Digital)	No			
	11	Isokinetic Stack Monitoring Kit complete with Stack monitoring instrument panel with inclined cum vertical manometer, Cold Box, Vacuum pump, Glass assembly impingers	Yes			
	12	Modified S type Stainless steel Pitot tube (Standard length) with Assembly	Yes			
	13	Monoblock type, rotary design vacuum pump	Yes			
	14	Orsat Apparatus	No			

	15	Source emission monitoring Impingers train set with spare impingers 100 ml & 225 ml capacity	Yes			
	16	Stainless steel heated Sampling Probes with thimble holders short and long	Yes			
	17	Flue Gas analyzer	Yes			
	18	Thermometer/ Thermocouple	Yes			
	19	Calibrator for Noise Meters	Yes			
	20	Digital Sound level ( Noise ) Metres	Yes			
	21	Portable TOC Analyzer for emission monitoring.	No			
	22	Polyurethane Foam PUF Sampler	No			
<b>b) Optional Requirements</b>						
	1	Anemometer	No			
	2	Weather Monitoring system	No			
	3	Wind speed/wind direction monitor	No			
	4	Continuous Ambient Air Monitoring System, Fixed	Yes			
	5	Continuous PM10 Analyzer	Yes			
	6	Continuous Ambient Air Monitoring System, Mobile	No			
	7	Continuous PM2.5 analyzer	No			
	8	Ambient Nitrogen Oxides (NO-NO2- NOx Analyzer	No			
	9	Ambient Ozone Analyzer	No			
	10	Ambient BTEX Analyzer	No			
	11	Multipoint Gas Calibration system	No			
	12	Ambient Sulphur Dioxide analyzer	No			
	13	Ambient Carbon Monoxide & Carbon dioxide analyzer	No			
	14	Total Hydrocarbon analyzer	Yes			

	15	Ambient Ammonia analyzer	No			
	16	Zero Gas Generator	No			
	17	Synthetic Air Cylinder	No			
	18	Calibration Gas Cylinders, SO <sub>2</sub> , NO, CO, NH <sub>3</sub> , Benzene and Toluene One each with stainless steel Regulators	No			
	19	Continuous emission monitoring equipment	No			
	20	19 inch Rack mounting system for air analyzers	No			
	21	Dry Gas Meter	No			
	22	Diesel Exhaust analyzer	Yes			
	23	Exhaust CO/HC analyzer with Sampling Probe	Yes			
	24	Automated Noise Monitoring System	No			
	25	Integrating Sound level meter	No			
	26	Continuous PM <sub>10</sub> & PM <sub>2.5</sub> Monitoring Analyzer TEOM system	No			
	27	Top loading orifice kit for calibration of HVS	No			
	28	Permeation tubes (SO <sub>2</sub> , NO-NO <sub>2</sub> -NO <sub>x</sub> , NH <sub>3</sub> , BTX)	No			
<b>C. List of Equipment required for processing of Environmental Samples:</b>						
<b>a) Mandatory Requirements</b>						
	1	Accelerated Solvent Extraction (ASE) System	No			
	2	Ammonia distillation assembly/TKN Analyzer	Yes			
	3	Analytical Balance 4/5 digit & 6 digit (Digital)	Yes			

	4	Aquarium for Toxicity bioassay test with complete accessories (*4 Nos)	No			
	5	Autoclave (*2 Nos)	Yes			
	6	Bacteriological Incubators Stainless steel (*2 Nos)	Yes			
	7	Bio safety cabinets	No			
	8	BOD Incubators (2 nos.)	Yes			
	9	Centrifuge	No			
	10	COD Digestion heated Blocks (2) with capacity 16 nos. or more	Yes			
	11	Cyanide Distillation Assembly (3)	No			
	12	Deep Freezer- Capacity 500 litre	Yes			
	13	Laboratory Ball Mill Grinder	No			
	14	Laboratory Grinder	No			
	15	Laminar Flow bench for Microbiological analysis	Yes			
	16	Magnetic Stirrer with heating system (*2 Nos)	No			
	17	Mechanical Shaker	No			
	18	Membrane Filtration assembly with vacuum pump (2 nos.)	No			
	19	Microbial culture refrigerator	No			
	20	Microwave Digester with 16 vessels/ Hot Plate	Yes			
	21	Muffle Furnace (*1 Nos), Range 1200 C	Yes			
	22	Phenol distillation assembly (3)	No			
	23	Plate counter, Manual/Automatic	No			
	24	Digestion Chambers/ Fume hood	No			
	25	Digital Thermometer & Humidity meter- All lab area	No			
	26	Dispensers (Various capacities ) up to 5, 10, 25 & 50 ml	No			

	27	Filtration Assembly with vacuum pump	Yes			
	28	Fluoride Distillation Assembly (3)	No			
	29	Arsenic / Fluoride Glass Distillation assemblies	No			
	30	Glass Double Distillation Assembly /Water Purification System	Yes			
	31	Heating mantles (2 nos.)	No			
	32	Hot plates (small, Medium and Large ) (*2 nos.)	Yes			
	33	Thermo Hygrometer	Yes			
	34	Imhoff Cone	No			
	35	Top loading Precision Digital Balance (minimum detection 0.001mg/0.01 mg) with anti-vibration facility- 3 nos. i.e 4/5 Digit (2 nos), - 6 Digit (1 no)	Yes			
	36	Refrigerators Big Size 300 litres or more, double door- 2 nos.	Yes			
	37	Rotary Evaporator (Buchi type) with water recirculating chiller	No			
	38	Separating funnel shaker	No			
	39	Soxhlet Apparatus	Yes			
	40	Solid Phase Extraction (SPE) /SPME Extraction system	No			
	41	Thermometer (Alcohol)	No			
	42	Dry & wet bulb Thermometer	Yes			
	43	Toxicity characteristic leaching procedure (TCLP) Extractors (Zero head and Bottle)	No			
	44	Ultra sonic water bath- Capacity 3 litre	No			

	45	Water Bath with temperature control (*2 Nos)	Yes			
	46	Water Bath with temp. for mercury sample digestion- 20 BOD Bottles	No			
<b>D. Analytical Instruments at Environmental Laboratories</b>						
<b>a) Mandatory Requirements</b>						
	1	Atomic Absorption spectrometer (AAS)- Flame, Hydride & Graphite Tube Atomizer (GTA)	No			
	2	Binocular Stereo Zoom Microscope	No			
	3	Bomb Calorimeter	No			
	4	BTX Analyzer with BTX calibrator	No			
	5	Colony counter	No			
	6	Conductivity meter- 2 nos.	Yes			
	7	Environment conditioning chamber	No			
	8	Digital Burettes- 50 ml*2, 100 ml*2	No			
	9	Dissolved Oxygen Meter (Bench model)	No			
	10	Flame Photometer	Yes			
	11	Flash Point Apparatus	No			
	12	Gas Chromatograph Mass Spectrometer	No			
	13	High Performance Liquid Chromatograph (HPLC)	No			
	14	Inductively Coupled Plasma (ICP) Spectrometer-OES	No			
	15	Ion Chromatograph Anion & Cations	No			
	16	Methane and Non Methane (NMHC) Analyzer	No			
	17	Microscope – 100x	No			
	18	Microscope Binocular Research	No			
	19	CO (NDIR based) Analyzer	No			

	20	Nephelometer (Turbidity Meter)	Yes			
	21	pH-Meter with combined electrode (3 point)- 2 nos.	Yes			
	22	Specific ion Analyzer with ion selective electrodes	No			
	23	Spectrophotometer Visible (Portable)	Yes			
	24	TKN Analyzer semi-automatic with aluminum block digester	No			
	25	UV-Vis Spectrophotometer	Yes			
	26	Moisture Content Analyzer	No			
<b>b) Optional Requirements</b>						
	1	Automatic Titration Assembly	No			
	2	Carbon, Hydrogen, Nitrogen and Sulphur (CHNS) Elemental Analyzer	No			
	3	EDXRF Analyzer/WDXRF Analyzer	No			
	4	Fourier-transform infrared Spectrometer (FTIR)	No			
	5	Flocculator ( Jar testing apparatus)	No			
	6	Toxic Gas Analyzer	No			
	7	Organic Halogen (AOX/TOX) Analyzer	No			
	8	TOC Analyzer	No			
	9	High Resolution Mass Spectrometer (HRGC-HRMS)	No			
	10	Inductively Coupled Plasma Mass (ICP-MS) Spectrometer	No			
	11	X Ray Fluorescence (XRF) Spectrometer (Portable)	No			

<b>PART I: Facility available for monitoring of environmental parameters:</b>				
<b>Parameters</b>	<b>Total Number of Parameters</b>	<b>Facility available for</b>	<b>Facility not available for</b>	
<b>A. Sample Matrix / Group of Water and Wastewater</b>	<b>67</b>	<b>29</b>	<b>38</b>	<b>0</b>
(a) Physical Tests	8	8	0	0
(b) Inorganic Tests	<b>34</b>	<b>14</b>	<b>20</b>	
(i) General & Non-metallic	15	12	3	0
(ii) Trace Metals Tests	19	2	17	0
(c) Organics (General) and Trace Organics Tests	<b>20</b>	<b>3</b>	<b>17</b>	<b>0</b>
Pesticides	15	0	15	0
Organochlorine Pesticides (OCPs) Tests	9	0	9	0
Organophosphorus Pesticides (OPPs) Tests	6	0	6	0
(d) Microbiological Tests	<b>4</b>	<b>4</b>	<b>0</b>	<b>0</b>
(e) Toxicological Tests	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>	<b>15</b>	<b>0</b>	<b>15</b>	
(a) Soil / Sediment / Compost Tests	7	0	7	0
(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests	8	0	8	0
<b>C. Sample Matrix / Group of Analytes: Air</b>	<b>28</b>	<b>12</b>	<b>16</b>	
(a) Ambient Air	12	4	8	0
(b) Stack Gas / Stationary Source Emission	9	5	4	0
(c) Noise Level	2	2	0	0
(d) Meteorological Monitoring	5	1	4	0
<b>PART II: Details of Laboratory Infrastructure (Instruments and Equipment)</b>				
<b>Name of Instrument / Equipments</b>	<b>Total Numbers</b>	<b>Number of Available</b>	<b>Number of Not Available</b>	
<b>Total</b>	<b>148</b>	<b>48</b>	<b>100</b>	<b>0</b>
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>	<b>15</b>	<b>6</b>	<b>9</b>	
a ) Mandatory Requirements	11	6	5	0
b) Optional Requirements	4	0	4	0
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>	<b>50</b>	<b>17</b>	<b>33</b>	
a) Mandatory Requirements	22	12	10	0
b) Optional Requirements	28	5	23	0
<b>C. List of Equipment required for processing of Environmental Samples:</b>	<b>46</b>	<b>19</b>	<b>27</b>	
a) Mandatory Requirements	46	19	27	0
<b>D. Analytical Instruments at Environmental Laboratories</b>	<b>37</b>	<b>6</b>	<b>31</b>	
a) Mandatory Requirements	26	6	20	0
b) Optional Requirements	11	0	11	0

<b>Note: It is requested to please ensure that each sheet is created separately for each laboratory and rename the sheet accordingly . For e.g. Central Laboratory, Regional Laboratory etc</b>				
<b>LABORATORY ANALYTICAL FACILITIES</b>				
Name of the Board / Committee: Regional Laboratory Jabalpur, Madhya Pradesh Pollution Control Board M.P (RO Jabalpur)				
<b>PART I: Facility available for monitoring of environmental parameters:</b>				
S. No.	Parameters	Facilities Available (Yes / No)	If facility is not available, Specify Timeline for addition of this parameter. (in months)	Action Taken for addition of this parameter (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. Sample Matrix / Group of Water and Wastewater</b>				
<b>(a) Physical Tests</b>				
1	Temperature	Yes		
2	Colour	Yes		
3	pH	Yes		
4	Turbidity	Yes		
5	Conductivity	Yes		
6	Total Solids	Yes		
7	Total Dissolved Solids (TDS)	Yes		
8	Total Suspended Solids (TSS)	Yes		
<b>(b) Inorganic Tests</b>				
<b>(i) General &amp; Non-metallic</b>				
1	Alkalinity	Yes		
2	Chloride	Yes		
3	Cyanide	No		
4	Dissolved oxygen	Yes		
5	Nitrite nitrogen	Yes		
6	Nitrate nitrogen	Yes		

	7	Ammonical nitrogen	Yes			
	8	Fluoride	Yes			
	9	Hardness (Total)	Yes			
	10	Calcium	Yes			
	11	Magnesium	Yes			
	12	Phosphate	Yes			
	13	Sulphate	Yes			
	14	Sulphide	No			
	15	Total Residual chlorine (TRC)	Yes			
<b>(ii) Trace Metals Tests</b>						
	1	Aluminium (Al)	No			
	2	Arsenic (As) Total	Yes			
	3	Barium	No			
	4	Boron	Yes			
	5	Chromium (Cr) Hexavalent	Yes			
	6	Chromium (Cr) Total	Yes			
	7	Cadmium (Cd)	No			
	8	Cobalt (Co)	No			
	9	Copper (Cu)	Yes			
	10	Iron (Fe)	Yes			
	11	Lead (Pb)	Yes			
	12	Manganese (Mn)	Yes			
	13	Mercury (Hg)	Yes			
	14	Nickel (Ni)	Yes			
	15	Potassium (K)	Yes			
	16	Sodium (Na)	Yes			
	17	Vanadium (V)	No			
	18	Zinc (Zn)	Yes			
	19	Selenium (Se)	No			
<b>(c) Organics (General) and Trace Organics Tests</b>						

	1	Biological Oxygen Demand (BOD)	Yes				
	2	Chemical oxygen demand (COD)	Yes				
	3	Oil & Grease	Yes				
	4	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	No				
	5	Benzopyrene	No				
	6	<b>Pesticides</b>					Samples are sent to Central Laboratory Bhopal
	6.a	<b>Organochlorine Pesticides (OCPs) Tests</b>					
	i	Aldrin	No				
	ii	Alpha Endosulphan	No				
	iii	p,p'-DDT	No				
	iv	Alpha-HCH	No				
	v	Beta HCH	No				
	vi	Beta Endosulphan	No				
	vii	Gama-HCH	No				
	viii	o,p'-DDT	No				
	ix	p,p'-DDE	No				
	6.b	<b>Organophosphorus Pesticides (OPPs) Tests</b>					
	i	Malathion	No				
	ii	Methyl parathion	No				
	iii	Chlorpyriphos	No				
	iv	Dimethoate	No				
	v	Dieldrin	No				
	vi	Ethion	No				
	<b>(d) Microbiological Tests</b>						
	1	Total Coliform	Yes				
	2	Faecal Coliform	Yes				
	3	E. Coli	No				
	4	Faecal Streptococci	Yes				
	<b>(e) Toxicological Tests</b>						
	1	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	Yes				
	<b>B. Sample Matrix / Group of Solid / Solid Waste</b>						
	<b>(a) Soil / Sediment / Compost Tests</b>						

	1	Cation Exchange Capacity (CEC)	No			
	2	Electrical Conductivity (EC)	No			
	3	Organic carbon (Chemical Method )	No			
	4	pH	No			
	5	Soil moisture	No			
	6	Total nitrogen	No			
	7	Metals by digestion (As, Cd, Cr, Pb, Ni etc.)	No			
<b>(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests</b>						
	1	Corrosivity	No			
	2	Ignitability (Flash Point)	No			
	3	Loss on Drying at 1050C (% Moisture Content)	No			
	4	Loss on Drying at 5500C (% Organic Content)	No			
	5	pH	No			
	6	Organic carbon/matter (Chemical Method )	No			
	7	Calorific Value	No			
	8	Toxicity Characteristics leaching procedure (TCLP) Leachate and Metals in Leachate (As,Cd,Cr, Pb, Ni)	No			
<b>C. Sample Matrix / Group of Analytes: Air</b>						
<b>(a) Ambient Air</b>						
	1	Nitrogen dioxide as NO2	Yes			
	2	Sulphur dioxide (SO2)	Yes			
	3	Particulate matter (PM10)	Yes			
	4	Particulate matter (PM2.5)	Yes			
	5	Carbon Monoxide	Yes			
	6	Ozone	Yes			
	7	Benzene	No			
	8	Ammonia	Yes			

	9	Metals in Particulate Matter, Pb	Yes			
	10	Metals in Particulate Matter, As	Yes			
	11	Metals in Particulate Matter, Ni	Yes			
	12	Particulate Benzo-a-Pyrene (BaP)	Yes			
<b>(b) Stack Gas / Stationary Source Emission</b>						
	1	Particulate Matter	Yes			
	2	Sulphur Dioxide	No			
	3	Carbon Dioxide	No			
	4	Carbon Monoxide (NDIR based Method)	No			
	5	Temperature	Yes			
	6	Moisture	No			
	7	Oxygen	No			
	8	Oxides of Nitrogen	No			
	9	Halides (HCL/HF)	No			
<b>(c) Noise Level</b>						
	1	Ambient Noise level measurement (20 to 140 dB)	Yes			
	2	Source Noise Level Measurement (Industrial process, DG set- 20 to 140dB)	Yes			
<b>(d) Meteorological Monitoring</b>						
	1	Ambient Temperature	No			
	2	Wind direction	No			
	3	Wind speed	No			
	4	Relative Humidity	No			
	5	Mixing Height	No			
Specific remarks, if any:						

PART II: Details of Laboratory Infrastructure (Instruments and Equipment)					
S. No.	Name of Instrument / Equipments	Available Yes / No	If the Instrument / Equipment is not available, Specify Timeline for procurement of this instrument (in months)	Action Taken for procurement of this Instrument / Equipment (Specification finalized / procurement initiated / work awarded / outsourced )	
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>					
<b>a ) Mandatory Requirements</b>					
1	Portable / Pen type pH meter / pH strip	Yes			
2	Portable Dissolved Oxygen Meter / Field Fixing using chemicals	No			
3	Electrical Conductivity meter pen type	Yes			
4	Flow meter / Physical flow measuring	No			
5	GPS / Mobile with GPS app	Yes			
6	Ice Box (2 nos.) (150 litre & 100 litre capacities)	Yes			
7	Thermometer	Yes			
8	Stainless steel bucket with nylon rope and mug	Yes			
9	Ground water level measuring device	No			
10	Scoop / shovel	Yes			
11	Auger / core sampler	No			
<b>b) Optional Requirements</b>					
1	Bottom Sampler / Depth sampler	No			
2	Chloroscope for residual chlorine	No			
3	Vandorn or equivalent water sampler (Automatic sampler when composite sampling to be done)	No			

	4	Ekman Dredge	No			
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>						
<b>a) Mandatory Requirements</b>						
	1	Fine dust samplers PM2.5 (*4 Nos)	Yes			
	2	Respirable Dust Sampler PM 10 (* 4 Nos)	Yes			
	3	High Volume Sampler ( SPM ) (4 Nos)	Yes			
	4	Handy Sampler with set of glass impingers (*2 Nos)	No			
	5	Low Volume Sampler (LVS)	No			
	6	Tedler bags different sizes	No			
	7	Meteorological tower (All in one telescopic Mast) with sensors comprising wind speed, wind direction, ambient temp., Relative humidity, Solar radiation, rainfall etc.	No			
	8	Nitrogen Cylinder portable	No			
	9	Activated Charcoal tubes/ Tenex	No			
	10	Barometer (Digital)	No			
	11	Isokinetic Stack Monitoring Kit complete with Stack monitoring instrument panel with inclined cum vertical manometer, Cold Box, Vacuum pump, Glass assembly impingers	Yes			
	12	Modified S type Stainless steel Pitot tube (Standard length) with Assembly	Yes			
	13	Monoblock type, rotary design vacuum pump	Yes			
	14	Orsat Apparatus	Yes			

	15	Source emission monitoring Impingers train set with spare impingers 100 ml & 225 ml capacity	Yes			
	16	Stainless steel heated Sampling Probes with thimble holders short and long	Yes			
	17	Flue Gas analyzer	Yes			
	18	Thermometer/ Thermocouple	Yes			
	19	Calibrator for Noise Meters	Yes			
	20	Digital Sound level ( Noise ) Metres	Yes			
	21	Portable TOC Analyzer for emission monitoring.	No			
	22	Polyurethane Foam PUF Sampler	No			
<b>b) Optional Requirements</b>						
	1	Anemometer	No			
	2	Weather Monitoring system	No			
	3	Wind speed/wind direction monitor	No			
	4	Continuous Ambient Air Monitoring System, Fixed	Yes			
	5	Continuous PM10 Analyzer	No			
	6	Continuous Ambient Air Monitoring System, Mobile	No			
	7	Continuous PM2.5 analyzer	No			
	8	Ambient Nitrogen Oxides (NO-NO2- NOx Analyzer	No			
	9	Ambient Ozone Analyzer	No			
	10	Ambient BTEX Analyzer	No			
	11	Multipoint Gas Calibration system	No			
	12	Ambient Sulphur Dioxide analyzer	No			
	13	Ambient Carbon Monoxide & Carbon dioxide analyzer	No			
	14	Total Hydrocarbon analyzer	No			

	15	Ambient Ammonia analyzer	No			
	16	Zero Gas Generator	No			
	17	Synthetic Air Cylinder	No			
	18	Calibration Gas Cylinders, SO <sub>2</sub> , NO, CO, NH <sub>3</sub> , Benzene and Toluene One each with stainless steel Regulators	No			
	19	Continuous emission monitoring equipment	No			
	20	19 inch Rack mounting system for air analyzers	No			
	21	Dry Gas Meter	No			
	22	Diesel Exhaust analyzer	Yes			
	23	Exhaust CO/HC analyzer with Sampling Probe	Yes			
	24	Automated Noise Monitoring System	Yes			
	25	Integrating Sound level meter	No			
	26	Continuous PM <sub>10</sub> & PM <sub>2.5</sub> Monitoring Analyzer TEOM system	No			
	27	Top loading orifice kit for calibration of HVS	Yes			
	28	Permeation tubes (SO <sub>2</sub> , NO-NO <sub>2</sub> -NO <sub>x</sub> , NH <sub>3</sub> , BTX)	No			
<b>C. List of Equipment required for processing of Environmental Samples:</b>						
<b>a) Mandatory Requirements</b>						
	1	Accelerated Solvent Extraction (ASE) System	No			
	2	Ammonia distillation assembly/TKN Analyzer	Yes			
	3	Analytical Balance 4/5 digit & 6 digit (Digital)	Yes			

	4	Aquarium for Toxicity bioassay test with complete accessories (*4 Nos)	Yes			
	5	Autoclave (*2 Nos)	Yes			
	6	Bacteriological Incubators Stainless steel (*2 Nos)	Yes			
	7	Bio safety cabinets	No			
	8	BOD Incubators (2 nos.)	Yes			
	9	Centrifuge	No			
	10	COD Digestion heated Blocks (2) with capacity 16 nos. or more	Yes			
	11	Cyanide Distillation Assembly (3)	No			
	12	Deep Freezer- Capacity 500 litre	Yes			
	13	Laboratory Ball Mill Grinder	No			
	14	Laboratory Grinder	No			
	15	Laminar Flow bench for Microbiological analysis	Yes			
	16	Magnetic Stirrer with heating system (*2 Nos)	Yes			
	17	Mechanical Shaker	No			
	18	Membrane Filtration assembly with vacuum pump (2 nos.)	Yes			
	19	Microbial culture refrigerator	No			
	20	Microwave Digester with 16 vessels/ Hot Plate	No			
	21	Muffle Furnace (*1 Nos), Range 1200 C	Yes			
	22	Phenol distillation assembly (3)	No			
	23	Plate counter, Manual/Automatic	No			
	24	Digestion Chambers/ Fume hood	Yes			
	25	Digital Thermometer & Humidity meter- All lab area	Yes			
	26	Dispensers (Various capacities ) up to 5, 10, 25 & 50 ml	No			

	27	Filtration Assembly with vacuum pump	Yes			
	28	Fluoride Distillation Assembly (3)	No			
	29	Arsenic / Fluoride Glass Distillation assemblies	No			
	30	Glass Double Distillation Assembly /Water Purification System	Yes			
	31	Heating mantles (2 nos.)	Yes			
	32	Hot plates (small, Medium and Large ) (*2 nos.)	Yes			
	33	Thermo Hygrometer	Yes			
	34	Imhoff Cone	Yes			
	35	Top loading Precision Digital Balance (minimum detection 0.001mg/0.01 mg) with anti-vibration facility- 3 nos. i.e 4/5 Digit (2 nos), - 6 Digit (1 no)	No			
	36	Refrigerators Big Size 300 litres or more, double door- 2 nos.	Yes			
	37	Rotary Evaporator (Buchi type) with water recirculating chiller	Yes			
	38	Separating funnel shaker	Yes			
	39	Soxhlet Apparatus	Yes			
	40	Solid Phase Extraction (SPE) /SPME Extraction system	No			
	41	Thermometer (Alcohol)	No			
	42	Dry & wet bulb Thermometer	No			
	43	Toxicity characteristic leaching procedure (TCLP) Extractors (Zero head and Bottle)	No			
	44	Ultra sonic water bath- Capacity 3 litre	Yes			

	45	Water Bath with temperature control (*2 Nos)	Yes			
	46	Water Bath with temp. for mercury sample digestion- 20 BOD Bottles	No			
<b>D. Analytical Instruments at Environmental Laboratories</b>						
<b>a) Mandatory Requirements</b>						
	1	Atomic Absorption spectrometer (AAS)- Flame, Hydride & Graphite Tube Atomizer (GTA)	Yes			
	2	Binocular Stereo Zoom Microscope	No			
	3	Bomb Calorimeter	No			
	4	BTX Analyzer with BTX calibrator	No			
	5	Colony counter	No			
	6	Conductivity meter- 2 nos.	Yes			
	7	Environment conditioning chamber	No			
	8	Digital Burettes- 50 ml*2, 100 ml*2	No			
	9	Dissolved Oxygen Meter (Bench model)	No			
	10	Flame Photometer	Yes			
	11	Flash Point Apparatus	No			
	12	Gas Chromatograph Mass Spectrometer	No			
	13	High Performance Liquid Chromatograph (HPLC)	No			
	14	Inductively Coupled Plasma (ICP) Spectrometer-OES	No			
	15	Ion Chromatograph Anion & Cations	No			
	16	Methane and Non Methane (NMHC) Analyzer	No			
	17	Microscope – 100x	No			
	18	Microscope Binocular Research	No			
	19	CO (NDIR based) Analyzer	No			

	20	Nephelometer (Turbidity Meter)	Yes			
	21	pH-Meter with combined electrode (3 point)- 2 nos.	Yes			
	22	Specific ion Analyzer with ion selective electrodes	No			
	23	Spectrophotometer Visible (Portable)	No			
	24	TKN Analyzer semi-automatic with aluminum block digester	No			
	25	UV-Vis Spectrophotometer	Yes			
	26	Moisture Content Analyzer	No			
<b>b) Optional Requirements</b>						
	1	Automatic Titration Assembly	No			
	2	Carbon, Hydrogen, Nitrogen and Sulphur (CHNS) Elemental Analyzer	No			
	3	EDXRF Analyzer/WDXRF Analyzer	No			
	4	Fourier-transform infrared Spectrometer (FTIR)	No			
	5	Flocculator ( Jar testing apparatus)	No			
	6	Toxic Gas Analyzer	No			
	7	Organic Halogen (AOX/TOX) Analyzer	No			
	8	TOC Analyzer	No			
	9	High Resolution Mass Spectrometer (HRGC-HRMS)	No			
	10	Inductively Coupled Plasma Mass (ICP-MS) Spectrometer	No			
	11	X Ray Fluorescence (XRF) Spectrometer (Portable)	No			

<b>PART I: Facility available for monitoring of environmental parameters:</b>				
<b>Parameters</b>	<b>Total Number of Parameters</b>	<b>Facility available for</b>	<b>Facility not available for</b>	
<b>A. Sample Matrix / Group of Water and Wastewater</b>	<b>67</b>	<b>41</b>	<b>26</b>	<b>0</b>
(a) Physical Tests	8	8	0	0
(b) Inorganic Tests	<b>34</b>	<b>26</b>	<b>8</b>	
(i) General & Non-metallic	15	13	2	0
(ii) Trace Metals Tests	19	13	6	0
(c) Organics (General) and Trace Organics Tests	<b>20</b>	<b>3</b>	<b>17</b>	<b>0</b>
Pesticides	15	0	15	0
Organochlorine Pesticides (OCPs) Tests	9	0	9	0
Organophosphorus Pesticides (OPPs) Tests	6	0	6	0
(d) Microbiological Tests	<b>4</b>	<b>3</b>	<b>1</b>	<b>0</b>
(e) Toxicological Tests	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>	<b>15</b>	<b>0</b>	<b>15</b>	
(a) Soil / Sediment / Compost Tests	7	0	7	0
(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests	8	0	8	0
<b>C. Sample Matrix / Group of Analytes: Air</b>	<b>28</b>	<b>15</b>	<b>13</b>	
(a) Ambient Air	12	11	1	0
(b) Stack Gas / Stationary Source Emission	9	2	7	0
(c) Noise Level	2	2	0	0
(d) Meteorological Monitoring	5	0	5	0
<b>PART II: Details of Laboratory Infrastructure (Instruments and Equipment)</b>				
<b>Name of Instrument / Equipments</b>	<b>Total Numbers</b>	<b>Number of Available</b>	<b>Number of Not Available</b>	
<b>Total</b>	<b>148</b>	<b>57</b>	<b>91</b>	<b>0</b>
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>	<b>15</b>	<b>7</b>	<b>8</b>	
a ) Mandatory Requirements	11	7	4	0
b) Optional Requirements	4	0	4	0
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>	<b>50</b>	<b>18</b>	<b>32</b>	
a) Mandatory Requirements	22	13	9	0
b) Optional Requirements	28	5	23	0
<b>C. List of Equipment required for processing of Environmental Samples:</b>	<b>46</b>	<b>26</b>	<b>20</b>	
a) Mandatory Requirements	46	26	20	0
<b>D. Analytical Instruments at Environmental Laboratories</b>	<b>37</b>	<b>6</b>	<b>31</b>	
a) Mandatory Requirements	26	6	20	0
b) Optional Requirements	11	0	11	0

<b>Note: It is requested to please ensure that each sheet is created separately for each laboratory and rename the sheet accordingly . For e.g. Central Laboratory, Regional Laboratory etc</b>				
<b>LABORATORY ANALYTICAL FACILITIES</b>				
<b>Name of the Board / Committee: Regional Laboratory Indore, Madhya Pradesh Pollution Control Board M.P (RO Indore)</b>				
<b>PART I: Facility available for monitoring of environmental parameters:</b>				
S. No.	Parameters	Facilities Available (Yes / No)	If facility is not available, Specify Timeline for addition of this parameter. (in months)	Action Taken for addition of this parameter (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. Sample Matrix / Group of Water and Wastewater</b>				
<b>(a) Physical Tests</b>				
1	Temperature	Yes		
2	Colour	Yes		
3	pH	Yes		
4	Turbidity	Yes		
5	Conductivity	Yes		
6	Total Solids	Yes		
7	Total Dissolved Solids (TDS)	Yes		
8	Total Suspended Solids (TSS)	Yes		
<b>(b) Inorganic Tests</b>				
<b>(i) General &amp; Non-metallic</b>				
1	Alkalinity	Yes		
2	Chloride	Yes		
3	Cyanide	Yes		
4	Dissolved oxygen	Yes		
5	Nitrite nitrogen	Yes		

	6	Nitrate nitrogen	Yes		
	7	Ammonical nitrogen	Yes		
	8	Fluoride	Yes		
	9	Hardness (Total)	Yes		
	10	Calcium	Yes		
	11	Magnesium	Yes		
	12	Phosphate	Yes		
	13	Sulphate	Yes		
	14	Sulphide	Yes		
	15	Total Residual chlorine (TRC)	Yes		
<b>(ii) Trace Metals Tests</b>					
	1	Aluminium (Al)	No		
	2	Arsenic (As) Total	Yes		
	3	Barium	No		
	4	Boron	Yes		
	5	Chromium (Cr) Hexavalent	Yes		
	6	Chromium (Cr) Total	Yes		
	7	Cadmium (Cd)	Yes		
	8	Cobalt (Co)	Yes		
	9	Copper (Cu)	Yes		
	10	Iron (Fe)	Yes		
	11	Lead (Pb)	Yes		
	12	Manganese (Mn)	Yes		
	13	Mercury (Hg)	Yes		
	14	Nickel (Ni)	Yes		
	15	Potassium (K)	Yes		
	16	Sodium (Na)	Yes		
	17	Vanadium (V)	Yes		
	18	Zinc (Zn)	Yes		
	19	Selenium (Se)	No		

<b>(c) Organics (General) and Trace Organics Tests</b>			
1	Biological Oxygen Demand (BOD)	Yes	
2	Chemical oxygen demand (COD)	Yes	
3	Oil & Grease	Yes	
4	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	Yes	
5	Benzopyrene	No	
6	<b>Pesticides</b>		
6.a	<b>Organochlorine Pesticides (OCPs) Tests</b>		
i	Aldrin	No	
ii	Alpha Endosulphan	No	
iii	p,p'-DDT	No	
iv	Alpha-HCH	No	
v	Beta HCH	No	
vi	Beta Endosulphan	No	
vii	Gama-HCH	No	
viii	o,p'-DDT	No	
ix	p,p'-DDE	No	
6.b	<b>Organophosphorus Pesticides (OPPs) Tests</b>		
i	Malathion	No	
ii	Methyl parathion	No	
iii	Chlorpyriphos	No	
iv	Dimethoate	No	
v	Dieldrin	No	
vi	Ethion	No	
<b>(d) Microbiological Tests</b>			
1	Total Coliform	Yes	
2	Faecal Coliform	Yes	
3	E. Coli	Yes	
4	Faecal Streptococci	Yes	
<b>(e) Toxicological Tests</b>			
1	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	Yes	
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>			

Samples are sent to Central Laboratory Bhopal

<b>(a) Soil / Sediment / Compost Tests</b>			
1	Cation Exchange Capacity (CEC)	No	
2	Electrical Conductivity (EC)	Yes	
3	Organic carbon (Chemical Method )	Yes	
4	pH	Yes	
5	Soil moisture	Yes	
6	Total nitrogen	Yes	
7	Metals by digestion (As, Cd, Cr, Pb, Ni etc.)	Yes	
<b>(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests</b>			
1	Corrosivity	Yes	
2	Ignitability (Flash Point)	Yes	
3	Loss on Drying at 1050C (% Moisture Content)	Yes	
4	Loss on Drying at 5500C (% Organic Content)	Yes	
5	pH	Yes	
6	Organic carbon/matter (Chemical Method )	Yes	
7	Calorific Value	Yes	
8	Toxicity Characteristics leaching procedure (TCLP) Leachate and Metals in Leachate (As,Cd,Cr, Pb, Ni)	Yes	
<b>C. Sample Matrix / Group of Analytes: Air</b>			
<b>(a) Ambient Air</b>			
1	Nitrogen dioxide as NO2	Yes	
2	Sulphur dioxide (SO2)	Yes	
3	Particulate matter (PM10)	Yes	
4	Particulate matter (PM2.5)	Yes	
5	Carbon Monoxide	No	
6	Ozone	Yes	
7	Benzene	Yes	
8	Ammonia	Yes	

	9	Metals in Particulate Matter, Pb	Yes		
	10	Metals in Particulate Matter, As	Yes		
	11	Metals in Particulate Matter, Ni	Yes		
	12	Particulate Benzo-a-Pyrene (BaP)	No		
<b>(b) Stack Gas / Stationary Source Emission</b>					
	1	Particulate Matter	Yes		
	2	Sulphur Dioxide	Yes		
	3	Carbon Dioxide	Yes		
	4	Carbon Monoxide (NDIR based Method)	Yes		
	5	Temperature	Yes		
	6	Moisture	Yes		
	7	Oxygen	Yes		
	8	Oxides of Nitrogen	Yes		
	9	Halides (HCL/HF)	Yes		
<b>(c) Noise Level</b>					
	1	Ambient Noise level measurement (20 to 140 dB)	Yes		
	2	Source Noise Level Measurement (Industrial process, DG set- 20 to 140dB)	Yes		
<b>(d) Meteorological Monitoring</b>					
	1	Ambient Temperature	Yes		
	2	Wind direction	Yes		
	3	Wind speed	Yes		
	4	Relative Humidity	Yes		
	5	Mixing Height	No		
Specific remarks, if any:					

PART II: Details of Laboratory Infrastructure (Instruments and Equipment)					
S. No.	Name of Instrument / Equipments	Available Yes / No	If the Instrument / Equipment is not available, Specify Timeline for procurement of this instrument (in months)	Action Taken for procurement of this Instrument / Equipment (Specification finalized / procurement initiated / work awarded / outsourced )	
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>					
<b>a ) Mandatory Requirements</b>					
1	Portable / Pen type pH meter / pH strip	Yes			
2	Portable Dissolved Oxygen Meter / Field Fixing using chemicals	No			
3	Electrical Conductivity meter pen type	No			
4	Flow meter / Physical flow measuring	Yes			
5	GPS / Mobile with GPS app	Yes			
6	Ice Box (2 nos.) (150 litre & 100 litre capacities)	Yes			
7	Thermometer	Yes			
8	Stainless steel bucket with nylon rope and mug	Yes			
9	Ground water level measuring device	No			
10	Scoop / shovel	Yes			
11	Auger / core sampler	Yes			
<b>b) Optional Requirements</b>					
1	Bottom Sampler / Depth sampler	Yes			
2	Chloroscope for residual chlorine	Yes			
3	Vandorn or equivalent water sampler (Automatic sampler when composite sampling to be done)	Yes			

	4	Ekman Dredge	Yes		
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>					
<b>a) Mandatory Requirements</b>					
	1	Fine dust samplers PM2.5 (*4 Nos)	Yes		
	2	Respirable Dust Sampler PM 10 (* 4 Nos)	Yes		
	3	High Volume Sampler ( SPM ) (4 Nos)	No		
	4	Handy Sampler with set of glass impingers (*2 Nos)	Yes		
	5	Low Volume Sampler (LVS)	No		
	6	Tedler bags different sizes	Yes		
	7	Meteorological tower (All in one telescopic Mast) with sensors comprising wind speed, wind direction, ambient temp., Relative humidity, Solar radiation, rainfall etc.	Yes		
	8	Nitrogen Cylinder portable	No		
	9	Activated Charcoal tubes/ Tenex	No		
	10	Barometer (Digital)	Yes		
	11	Isokinetic Stack Monitoring Kit complete with Stack monitoring instrument panel with inclined cum vertical manometer, Cold Box, Vacuum pump, Glass assembly impingers	Yes		
	12	Modified S type Stainless steel Pitot tube (Standard length) with Assembly	Yes		
	13	Monoblock type, rotary design vacuum pump	Yes		
	14	Orsat Apparatus	Yes		

	15	Source emission monitoring Impingers train set with spare impingers 100 ml & 225 ml capacity	Yes			
	16	Stainless steel heated Sampling Probes with thimble holders short and long	Yes			
	17	Flue Gas analyzer	Yes			
	18	Thermometer/ Thermocouple	Yes			
	19	Calibrator for Noise Meters	Yes			
	20	Digital Sound level ( Noise ) Metres	Yes			
	21	Portable TOC Analyzer for emission monitoring.	No			
	22	Polyurethane Foam PUF Sampler	No			
<b>b) Optional Requirements</b>						
	1	Anemometer	Yes			
	2	Weather Monitoring system	Yes			
	3	Wind speed/wind direction monitor	Yes			
	4	Continuous Ambient Air Monitoring System, Fixed	Yes			
	5	Continuous PM10 Analyzer	Yes			
	6	Continuous Ambient Air Monitoring System, Mobile	Yes			
	7	Continuous PM2.5 analyzer	Yes			
	8	Ambient Nitrogen Oxides (NO-NO2- NOx Analyzer	Yes			
	9	Ambient Ozone Analyzer	Yes			
	10	Ambient BTEX Analyzer	Yes			
	11	Multipoint Gas Calibration system	Yes			
	12	Ambient Sulphur Dioxide analyzer	Yes			
	13	Ambient Carbon Monoxide & Carbon dioxide analyzer	Yes			
	14	Total Hydrocarbon analyzer	Yes			

	15	Ambient Ammonia analyzer	Yes			
	16	Zero Gas Generator	No			
	17	Synthetic Air Cylinder	No			
	18	Calibration Gas Cylinders, SO <sub>2</sub> , NO, CO, NH <sub>3</sub> , Benzene and Toluene One each with stainless steel Regulators	Yes			
	19	Continuous emission monitoring equipment	No			
	20	19 inch Rack mounting system for air analyzers	No			
	21	Dry Gas Meter	Yes			
	22	Diesel Exhaust analyzer	Yes			
	23	Exhaust CO/HC analyzer with Sampling Probe	Yes			
	24	Automated Noise Monitoring System	Yes			
	25	Integrating Sound level meter	Yes			
	26	Continuous PM <sub>10</sub> & PM <sub>2.5</sub> Monitoring Analyzer TEOM system	Yes			
	27	Top loading orifice kit for calibration of HVS	No			
	28	Permeation tubes (SO <sub>2</sub> , NO-NO <sub>2</sub> -NO <sub>x</sub> , NH <sub>3</sub> , BTX)	No			
<b>C. List of Equipment required for processing of Environmental Samples:</b>						
<b>a) Mandatory Requirements</b>						
	1	Accelerated Solvent Extraction (ASE) System	No			
	2	Ammonia distillation assembly/TKN Analyzer	Yes			
	3	Analytical Balance 4/5 digit & 6 digit (Digital)	Yes			

	4	Aquarium for Toxicity bioassay test with complete accessories (*4 Nos)	Yes			
	5	Autoclave (*2 Nos)	Yes			
	6	Bacteriological Incubators Stainless steel (*2 Nos)	Yes			
	7	Bio safety cabinets	Yes			
	8	BOD Incubators (2 nos.)	Yes			
	9	Centrifuge	Yes			
	10	COD Digestion heated Blocks (2) with capacity 16 nos. or more	Yes			
	11	Cyanide Distillation Assembly (3)	Yes			
	12	Deep Freezer- Capacity 500 litre	Yes			
	13	Laboratory Ball Mill Grinder	No			
	14	Laboratory Grinder	No			
	15	Laminar Flow bench for Microbiological analysis	Yes			
	16	Magnetic Stirrer with heating system (*2 Nos)	Yes			
	17	Mechanical Shaker	Yes			
	18	Membrane Filtration assembly with vacuum pump (2 nos.)	Yes			
	19	Microbial culture refrigerator	Yes			
	20	Microwave Digester with 16 vessels/ Hot Plate	No			
	21	Muffle Furnace (*1 Nos), Range 1200 C	Yes			
	22	Phenol distillation assembly (3)	No			
	23	Plate counter, Manual/Automatic	No			
	24	Digestion Chambers/ Fume hood	Yes			
	25	Digital Thermometer & Humidity meter- All lab area	Yes			
	26	Dispensers (Various capacities ) up to 5, 10, 25 & 50 ml	Yes			

	27	Filtration Assembly with vacuum pump	Yes			
	28	Fluoride Distillation Assembly (3)	Yes			
	29	Arsenic / Fluoride Glass Distillation assemblies	Yes			
	30	Glass Double Distillation Assembly /Water Purification System	Yes			
	31	Heating mantles (2 nos.)	Yes			
	32	Hot plates (small, Medium and Large ) (*2 nos.)	Yes			
	33	Thermo Hygrometer	Yes			
	34	Imhoff Cone	No			
	35	Top loading Precision Digital Balance (minimum detection 0.001mg/0.01 mg) with anti-vibration facility- 3 nos. i.e 4/5 Digit (2 nos), - 6 Digit (1 no)	Yes			
	36	Refrigerators Big Size 300 litres or more, double door- 2 nos.	Yes			
	37	Rotary Evaporator (Buchi type) with water recirculating chiller	Yes			
	38	Separating funnel shaker	No			
	39	Soxhlet Apparatus	Yes			
	40	Solid Phase Extraction (SPE) /SPME Extraction system	No			
	41	Thermometer (Alcohol)	Yes			
	42	Dry & wet bulb Thermometer	Yes			
	43	Toxicity characteristic leaching procedure (TCLP) Extractors (Zero head and Bottle)	Yes			
	44	Ultra sonic water bath- Capacity 3 litre	Yes			

	45	Water Bath with temperature control (*2 Nos)	Yes			
	46	Water Bath with temp. for mercury sample digestion- 20 BOD Bottles	No			
<b>D. Analytical Instruments at Environmental Laboratories</b>						
<b>a) Mandatory Requirements</b>						
	1	Atomic Absorption spectrometer (AAS)- Flame, Hydride & Graphite Tube Atomizer (GTA)	Yes			
	2	Binocular Stereo Zoom Microscope	No			
	3	Bomb Calorimeter	No			
	4	BTX Analyzer with BTX calibrator	No			
	5	Colony counter	No			
	6	Conductivity meter- 2 nos.	Yes			
	7	Environment conditioning chamber	No			
	8	Digital Burettes- 50 ml*2, 100 ml*2	No			
	9	Dissolved Oxygen Meter (Bench model)	No			
	10	Flame Photometer	Yes			
	11	Flash Point Apparatus	Yes			
	12	Gas Chromatograph Mass Spectrometer	No			
	13	High Performance Liquid Chromatograph (HPLC)	No			
	14	Inductively Coupled Plasma (ICP) Spectrometer-OES	No			
	15	Ion Chromatograph Anion & Cations	No			
	16	Methane and Non Methane (NMHC) Analyzer	Yes			
	17	Microscope – 100x	Yes			
	18	Microscope Binocular Research	No			
	19	CO (NDIR based) Analyzer	Yes			

	20	Nephelometer (Turbidity Meter)	Yes			
	21	pH-Meter with combined electrode (3 point)- 2 nos.	Yes			
	22	Specific ion Analyzer with ion selective electrodes	No			
	23	Spectrophotometer Visible (Portable)	Yes			
	24	TKN Analyzer semi-automatic with aluminum block digester	No			
	25	UV-Vis Spectrophotometer	Yes			
	26	Moisture Content Analyzer	No			
<b>b) Optional Requirements</b>						
	1	Automatic Titration Assembly	No			
	2	Carbon, Hydrogen, Nitrogen and Sulphur (CHNS) Elemental Analyzer	No			
	3	EDXRF Analyzer/WDXRF Analyzer	No			
	4	Fourier-transform infrared Spectrometer (FTIR)	No			
	5	Flocculator ( Jar testing apparatus)	No			
	6	Toxic Gas Analyzer	No			
	7	Organic Halogen (AOX/TOX) Analyzer	No			
	8	TOC Analyzer	No			
	9	High Resolution Mass Spectrometer (HRGC-HRMS)	No			
	10	Inductively Coupled Plasma Mass (ICP-MS) Spectrometer	No			
	11	X Ray Fluorescence (XRF) Spectrometer (Portable)	No			

<b>PART I: Facility available for monitoring of environmental parameters:</b>				
<b>Parameters</b>	<b>Total Number of Parameters</b>	<b>Facility available for</b>	<b>Facility not available for</b>	
<b>A. Sample Matrix / Group of Water and Wastewater</b>	<b>67</b>	<b>48</b>	<b>19</b>	<b>0</b>
(a) Physical Tests	8	8	0	0
(b) Inorganic Tests	<b>34</b>	<b>31</b>	<b>3</b>	
(i) General & Non-metallic	15	15	0	0
(ii) Trace Metals Tests	19	16	3	0
(c) Organics (General) and Trace Organics Tests	<b>20</b>	<b>4</b>	<b>16</b>	<b>0</b>
Pesticides	15	0	15	0
Organochlorine Pesticides (OCPs) Tests	9	0	9	0
Organophosphorus Pesticides (OPPs) Tests	6	0	6	0
(d) Microbiological Tests	<b>4</b>	<b>4</b>	<b>0</b>	<b>0</b>
(e) Toxicological Tests	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>	<b>15</b>	<b>14</b>	<b>1</b>	
(a) Soil / Sediment / Compost Tests	7	6	1	0
(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests	8	8	0	0
<b>C. Sample Matrix / Group of Analytes: Air</b>	<b>28</b>	<b>25</b>	<b>3</b>	
(a) Ambient Air	12	10	2	0
(b) Stack Gas / Stationary Source Emission	9	9	0	0
(c) Noise Level	2	2	0	0
(d) Meteorological Monitoring	5	4	1	0
<b>PART II: Details of Laboratory Infrastructure (Instruments and Equipment)</b>				
<b>Name of Instrument / Equipments</b>	<b>Total Numbers</b>	<b>Number of Available</b>	<b>Number of Not Available</b>	
<b>Total</b>	<b>148</b>	<b>97</b>	<b>51</b>	<b>0</b>
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>	<b>15</b>	<b>12</b>	<b>3</b>	
a ) Mandatory Requirements	11	8	3	0
b) Optional Requirements	4	4	0	0
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>	<b>50</b>	<b>38</b>	<b>12</b>	
a) Mandatory Requirements	22	16	6	0
b) Optional Requirements	28	22	6	0
<b>C. List of Equipment required for processing of Environmental Samples:</b>	<b>46</b>	<b>36</b>	<b>10</b>	
a) Mandatory Requirements	46	36	10	0
<b>D. Analytical Instruments at Environmental Laboratories</b>	<b>37</b>	<b>11</b>	<b>26</b>	
a) Mandatory Requirements	26	11	15	0
b) Optional Requirements	11	0	11	0

<b>Note: It is requested to please ensure that each sheet is created separately for each laboratory and rename the sheet accordingly . For e.g. Central Laboratory, Regional Laboratory etc</b>				
<b>LABORATORY ANALYTICAL FACILITIES</b>				
<b>Name of the Board / Committee: Regional Laboratory Ujjain, Madhya Pradesh Pollution Control Board M.P (RO Ujjain)</b>				
<b>PART I: Facility available for monitoring of environmental parameters:</b>				
S. No.	Parameters	Facilities Available (Yes / No)	If facility is not available, Specify Timeline for addition of this parameter. (in months)	Action Taken for addition of this parameter (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. Sample Matrix / Group of Water and Wastewater</b>				
<b>(a) Physical Tests</b>				
1	Temperature	Yes		
2	Colour	Yes		
3	pH	Yes		
4	Turbidity	Yes		
5	Conductivity	Yes		
6	Total Solids	Yes		
7	Total Dissolved Solids (TDS)	Yes		
8	Total Suspended Solids (TSS)	Yes		
<b>(b) Inorganic Tests</b>				
<b>(i) General &amp; Non-metallic</b>				
1	Alkalinity	Yes		
2	Chloride	Yes		
3	Cyanide	No		
4	Dissolved oxygen	Yes		
5	Nitrite nitrogen	Yes		

	6	Nitrate nitrogen	Yes		
	7	Ammonical nitrogen	Yes		
	8	Fluoride	Yes		
	9	Hardness (Total)	Yes		
	10	Calcium	Yes		
	11	Magnesium	Yes		
	12	Phosphate	Yes		
	13	Sulphate	Yes		
	14	Sulphide	Yes		
	15	Total Residual chlorine (TRC)	Yes		
<b>(ii) Trace Metals Tests</b>					
	1	Aluminium (Al)	No		
	2	Arsenic (As) Total	Yes		
	3	Barium	No		
	4	Boron	Yes		
	5	Chromium (Cr) Hexavalent	Yes		
	6	Chromium (Cr) Total	Yes		
	7	Cadmium (Cd)	No		
	8	Cobalt (Co)	Yes		
	9	Copper (Cu)	Yes		
	10	Iron (Fe)	Yes		
	11	Lead (Pb)	Yes		
	12	Manganese (Mn)	Yes		
	13	Mercury (Hg)	Yes		
	14	Nickel (Ni)	Yes		
	15	Potassium (K)	Yes		
	16	Sodium (Na)	Yes		
	17	Vanadium (V)	Yes		
	18	Zinc (Zn)	Yes		
	19	Selenium (Se)	Yes		

<b>(c) Organics (General) and Trace Organics Tests</b>				
1	Biological Oxygen Demand (BOD)	Yes		
2	Chemical oxygen demand (COD)	Yes		
3	Oil & Grease	Yes		
4	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	No		
5	Benzopyrene	Yes		
6	<b>Pesticides</b>			
6.a	<b>Organochlorine Pesticides (OCPs) Tests</b>			
i	Aldrin	Yes		
ii	Alpha Endosulphan	Yes		
iii	p,p'-DDT	Yes		
iv	Alpha-HCH	Yes		
v	Beta HCH	Yes		
vi	Beta Endosulphan	Yes		
vii	Gama-HCH	Yes		
viii	o,p'-DDT	Yes		
ix	p,p'-DDE	Yes		
6.b	<b>Organophosphorus Pesticides (OPPs) Tests</b>			
i	Malathion	Yes		
ii	Methyl parathion	Yes		
iii	Chlorpyrifos	Yes		
iv	Dimethoate	Yes		
v	Dieldrin	Yes		
vi	Ethion	Yes		
<b>(d) Microbiological Tests</b>				
1	Total Coliform	Yes		
2	Faecal Coliform	Yes		
3	E. Coli	Yes		
4	Faecal Streptococci	Yes		
<b>(e) Toxicological Tests</b>				
1	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	Yes		
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>				

<b>(a) Soil / Sediment / Compost Tests</b>				
1	Cation Exchange Capacity (CEC)	No		
2	Electrical Conductivity (EC)	Yes		
3	Organic carbon (Chemical Method )	Yes		
4	pH	Yes		
5	Soil moisture	Yes		
6	Total nitrogen	Yes		
7	Metals by digestion (As, Cd, Cr, Pb, Ni etc.)	Yes		
<b>(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests</b>				
1	Corrosivity	Yes		
2	Ignitability (Flash Point)	Yes		
3	Loss on Drying at 1050C (% Moisture Content)	Yes		
4	Loss on Drying at 5500C (% Organic Content)	Yes		
5	pH	Yes		
6	Organic carbon/matter (Chemical Method )	Yes		
7	Calorific Value	Yes		
8	Toxicity Characteristics leaching procedure (TCLP) Leachate and Metals in Leachate (As,Cd,Cr, Pb, Ni)	No		
<b>C. Sample Matrix / Group of Analytes: Air</b>				
<b>(a) Ambient Air</b>				
1	Nitrogen dioxide as NO2	Yes		
2	Sulphur dioxide (SO2)	Yes		
3	Particulate matter (PM10)	Yes		
4	Particulate matter (PM2.5)	Yes		
5	Carbon Monoxide	Yes		
6	Ozone	Yes		
7	Benzene	Yes		
8	Ammonia	Yes		

9	Metals in Particulate Matter, Pb	Yes
10	Metals in Particulate Matter, As	Yes
11	Metals in Particulate Matter, Ni	Yes
12	Particulate Benzo-a-Pyrene (BaP)	Yes
<b>(b) Stack Gas / Stationary Source Emission</b>		
1	Particulate Matter	Yes
2	Sulphur Dioxide	Yes
3	Carbon Dioxide	Yes
4	Carbon Monoxide (NDIR based Method)	No
5	Temperature	Yes
6	Moisture	Yes
7	Oxygen	No
8	Oxides of Nitrogen	No
9	Halides (HCL/HF)	No
<b>(c) Noise Level</b>		
1	Ambient Noise level measurement (20 to 140 dB)	Yes
2	Source Noise Level Measurement (Industrial process, DG set- 20 to 140dB)	Yes
<b>(d) Meteorological Monitoring</b>		
1	Ambient Temperature	Yes
2	Wind direction	Yes
3	Wind speed	Yes
4	Relative Humidity	Yes
5	Mixing Height	Yes

Specific remarks, if any:

## PART II: Details of Laboratory Infrastructure (Instruments and Equipment)

S. No.	Name of Instrument / Equipments	Available Yes / No	If the Instrument / Equipment is not available, Specify Timeline for procurement of this instrument (in months)	Action Taken for procurement of this Instrument / Equipment (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>				
<b>a ) Mandatory Requirements</b>				
1	Portable / Pen type pH meter / pH strip	Yes		
2	Portable Dissolved Oxygen Meter / Field Fixing using chemicals	Yes		
3	Electrical Conductivity meter pen type	No		
4	Flow meter / Physical flow measuring	No		
5	GPS / Mobile with GPS app	Yes		
6	Ice Box (2 nos.) (150 litre & 100 litre capacities)	Yes		
7	Thermometer	Yes		
8	Stainless steel bucket with nylon rope and mug	Yes		
9	Ground water level measuring device	No		
10	Scoop / shovel	Yes		
11	Auger / core sampler	Yes		
<b>b) Optional Requirements</b>				
1	Bottom Sampler / Depth sampler	Yes		
2	Chloroscope for residual chlorine	Yes		
3	Vandorn or equivalent water sampler (Automatic sampler when composite sampling to be done)	No		

4	Ekman Dredge	No
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**B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring**

**a) Mandatory Requirements**

1	Fine dust samplers PM2.5 (*4 Nos)	Yes
2	Respirable Dust Sampler PM 10 (* 4 Nos)	Yes
3	High Volume Sampler ( SPM ) (4 Nos)	Yes
4	Handy Sampler with set of glass impingers (*2 Nos)	Yes
5	Low Volume Sampler (LVS)	No
6	Tedler bags different sizes	Yes
7	Meteorological tower (All in one telescopic Mast) with sensors comprising wind speed, wind direction, ambient temp., Relative humidity, Solar radiation, rainfall etc.	Yes
8	Nitrogen Cylinder portable	No
9	Activated Charcoal tubes/ Tenex	No
10	Barometer (Digital)	No
11	Isokinetic Stack Monitoring Kit complete with Stack monitoring instrument panel with inclined cum vertical manometer, Cold Box, Vacuum pump, Glass assembly impingers	Yes
12	Modified S type Stainless steel Pitot tube (Standard length) with Assembly	Yes
13	Monoblock type, rotary design vacuum pump	Yes
14	Orsat Apparatus	No

15	Source emission monitoring Impingers train set with spare impingers 100 ml & 225 ml capacity	Yes
16	Stainless steel heated Sampling Probes with thimble holders short and long	Yes
17	Flue Gas analyzer	Yes
18	Thermometer/ Thermocouple	Yes
19	Calibrator for Noise Meters	Yes
20	Digital Sound level ( Noise ) Metres	Yes
21	Portable TOC Analyzer for emission monitoring.	No
22	Polyurethane Foam PUF Sampler	No
<b>b) Optional Requirements</b>		
1	Anemometer	No
2	Weather Monitoring system	No
3	Wind speed/wind direction monitor	No
4	Continuous Ambient Air Monitoring System, Fixed	Yes
5	Continuous PM10 Analyzer	Yes
6	Continuous Ambient Air Monitoring System, Mobile	No
7	Continuous PM2.5 analyzer	Yes
8	Ambient Nitrogen Oxides (NO-NO2- NOx Analyzer	Yes
9	Ambient Ozone Analyzer	Yes
10	Ambient BTEX Analyzer	Yes
11	Multipoint Gas Calibration system	Yes
12	Ambient Sulphur Dioxide analyzer	Yes
13	Ambient Carbon Monoxide & Carbon dioxide analyzer	Yes
14	Total Hydrocarbon analyzer	No

15	Ambient Ammonia analyzer	Yes
16	Zero Gas Generator	No
17	Synthetic Air Cylinder	No
18	Calibration Gas Cylinders, SO <sub>2</sub> , NO, CO, NH <sub>3</sub> , Benzene and Toluene One each with stainless steel Regulators	Yes
19	Continuous emission monitoring equipment	Yes
20	19 inch Rack mounting system for air analyzers	Yes
21	Dry Gas Meter	Yes
22	Diesel Exhaust analyzer	Yes
23	Exhaust CO/HC analyzer with Sampling Probe	Yes
24	Automated Noise Monitoring System	No
25	Integrating Sound level meter	No
26	Continuous PM <sub>10</sub> & PM <sub>2.5</sub> Monitoring Analyzer TEOM system	No
27	Top loading orifice kit for calibration of HVS	No
28	Permeation tubes (SO <sub>2</sub> , NO-NO <sub>2</sub> - NO <sub>x</sub> , NH <sub>3</sub> , BTX)	No

**C. List of Equipment required for processing of Environmental Samples:**

**a) Mandatory Requirements**

1	Accelerated Solvent Extraction (ASE) System	No
2	Ammonia distillation assembly/TKN Analyzer	Yes
3	Analytical Balance 4/5 digit & 6 digit (Digital)	Yes

4	Aquarium for Toxicity bioassay test with complete accessories (*4 Nos)	Yes
5	Autoclave (*2 Nos)	Yes
6	Bacteriological Incubators Stainless steel (*2 Nos)	Yes
7	Bio safety cabinets	Yes
8	BOD Incubators (2 nos.)	Yes
9	Centrifuge	Yes
10	COD Digestion heated Blocks (2) with capacity 16 nos. or more	Yes
11	Cyanide Distillation Assembly (3)	No
12	Deep Freezer- Capacity 500 litre	Yes
13	Laboratory Ball Mill Grinder	No
14	Laboratory Grinder	No
15	Laminar Flow bench for Microbiological analysis	Yes
16	Magnetic Stirrer with heating system (*2 Nos)	Yes
17	Mechanical Shaker	Yes
18	Membrane Filtration assembly with vacuum pump (2 nos.)	Yes
19	Microbial culture refrigerator	No
20	Microwave Digester with 16 vessels/ Hot Plate	Yes
21	Muffle Furnace (*1 Nos), Range 1200 C	Yes
22	Phenol distillation assembly (3)	No
23	Plate counter, Manual/Automatic	Yes
24	Digestion Chambers/ Fume hood	Yes
25	Digital Thermometer & Humidity meter- All lab area	Yes
26	Dispensers (Various capacities ) up to 5, 10, 25 & 50 ml	Yes

27	Filtration Assembly with vacuum pump	Yes
28	Fluoride Distillation Assembly (3)	No
29	Arsenic / Fluoride Glass Distillation assemblies	No
30	Glass Double Distillation Assembly /Water Purification System	No
31	Heating mantles (2 nos.)	Yes
32	Hot plates (small, Medium and Large ) (*2 nos.)	Yes
33	Thermo Hygrometer	Yes
34	Imhoff Cone	No
35	Top loading Precision Digital Balance (minimum detection 0.001mg/0.01 mg) with anti-vibration facility- 3 nos. i.e 4/5 Digit (2 nos), - 6 Digit (1 no)	Yes
36	Refrigerators Big Size 300 litres or more, double door- 2 nos.	Yes
37	Rotary Evaporator (Buchi type) with water recirculating chiller	Yes
38	Separating funnel shaker	No
39	Soxhlet Apparatus	Yes
40	Solid Phase Extraction (SPE) /SPME Extraction system	No
41	Thermometer (Alcohol)	Yes
42	Dry & wet bulb Thermometer	Yes
43	Toxicity characteristic leaching procedure (TCLP) Extractors (Zero head and Bottle)	No
44	Ultra sonic water bath- Capacity 3 litre	No

45	Water Bath with temperature control (*2 Nos)	Yes
46	Water Bath with temp. for mercury sample digestion- 20 BOD Bottles	No

#### D. Analytical Instruments at Environmental Laboratories

##### a) Mandatory Requirements

1	Atomic Absorption spectrometer (AAS)- Flame, Hydride & Graphite Tube Atomizer (GTA)	Yes
2	Binocular Stereo Zoom Microscope	Yes
3	Bomb Calorimeter	Yes
4	BTX Analyzer with BTX calibrator	No
5	Colony counter	Yes
6	Conductivity meter- 2 nos.	Yes
7	Environment conditioning chamber	No
8	Digital Burettes- 50 ml*2, 100 ml*2	No
9	Dissolved Oxygen Meter (Bench model)	No
10	Flame Photometer	Yes
11	Flash Point Apparatus	Yes
12	Gas Chromatograph Mass Spectrometer	Yes
13	High Performance Liquid Chromatograph (HPLC)	No
14	Inductively Coupled Plasma (ICP) Spectrometer-OES	No
15	Ion Chromatograph Anion & Cations	No
16	Methane and Non Methane (NMHC) Analyzer	No
17	Microscope – 100x	Yes
18	Microscope Binocular Research	Yes
19	CO (NDIR based) Analyzer	No

20	Nephelometer (Turbidity Meter)	Yes
21	pH-Meter with combined electrode (3 point)- 2 nos.	Yes
22	Specific ion Analyzer with ion selective electrodes	No
23	Spectrophotometer Visible (Portable)	No
24	TKN Analyzer semi-automatic with aluminum block digester	Yes
25	UV-Vis Spectrophotometer	Yes
26	Moisture Content Analyzer	No
<b>b) Optional Requirements</b>		
1	Automatic Titration Assembly	No
2	Carbon, Hydrogen, Nitrogen and Sulphur (CHNS) Elemental Analyzer	No
3	EDXRF Analyzer/WDXRF Analyzer	No
4	Fourier-transform infrared Spectrometer (FTIR)	No
5	Flocculator ( Jar testing apparatus)	No
6	Toxic Gas Analyzer	No
7	Organic Halogen (AOX/TOX) Analyzer	No
8	TOC Analyzer	Yes
9	High Resolution Mass Spectrometer (HRGC-HRMS)	No
10	Inductively Coupled Plasma Mass (ICP-MS) Spectrometer	No
11	X Ray Fluorescence (XRF) Spectrometer (Portable)	No

## PART I: Facility available for monitoring of environmental parameters:

Parameters	Total Number of Parameters	Facility available for	Facility not available for	
<b>A. Sample Matrix / Group of Water and Wastewater</b>	<b>67</b>	<b>62</b>	<b>5</b>	<b>0</b>
(a) Physical Tests	8	8	0	0
(b) Inorganic Tests	<b>34</b>	<b>30</b>	<b>4</b>	
(i) General & Non-metallic	15	14	1	0
(ii) Trace Metals Tests	19	16	3	0
(c) Organics (General) and Trace Organics Tests	<b>20</b>	<b>19</b>	<b>1</b>	<b>0</b>
Pesticides	15	15	0	0
Organochlorine Pesticides (OCPs) Tests	9	9	0	0
Organophosphorus Pesticides (OPPs) Tests	6	6	0	0
(d) Microbiological Tests	<b>4</b>	<b>4</b>	<b>0</b>	<b>0</b>
(e) Toxicological Tests	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>	<b>15</b>	<b>13</b>	<b>2</b>	
(a) Soil / Sediment / Compost Tests	7	6	1	0
(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests	8	7	1	0
<b>C. Sample Matrix / Group of Analytes: Air</b>	<b>28</b>	<b>24</b>	<b>4</b>	
(a) Ambient Air	12	12	0	0
(b) Stack Gas / Stationary Source Emission	9	5	4	0
(c) Noise Level	2	2	0	0
(d) Meteorological Monitoring	5	5	0	0

## PART II: Details of Laboratory Infrastructure (Instruments and Equipment)

Name of Instrument / Equipments	Total Numbers	Number of Available	Number of Not Available	
<b>Total</b>	<b>148</b>	<b>87</b>	<b>61</b>	<b>0</b>
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>	<b>15</b>	<b>10</b>	<b>5</b>	
a ) Mandatory Requirements	11	8	3	0
b) Optional Requirements	4	2	2	0
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>	<b>50</b>	<b>31</b>	<b>19</b>	
a) Mandatory Requirements	22	15	7	0
b) Optional Requirements	28	16	12	0
<b>C. List of Equipment required for processing of Environmental Samples:</b>	<b>46</b>	<b>31</b>	<b>15</b>	
a) Mandatory Requirements	46	31	15	0
<b>D. Analytical Instruments at Environmental Laboratories</b>	<b>37</b>	<b>15</b>	<b>22</b>	
a) Mandatory Requirements	26	14	12	0
b) Optional Requirements	11	1	10	0

**Note: It is requested to please ensure that each sheet is created separately for each laboratory and rename the sheet accordingly . For e.g. Central Laboratory, Regional Laboratory etc**

### LABORATORY ANALYTICAL FACILITIES

**Name of the Board / Committee: Regional Laboratory Sagar, Madhya Pradesh Pollution Control Board M.P (RO Sagar)**

#### PART I: Facility available for monitoring of environmental parameters:

S. No.	Parameters	Facilities Available (Yes / No)	If facility is not available, Specify Timeline for addition of this parameter. (in months)	Action Taken for addition of this parameter (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. Sample Matrix / Group of Water and Wastewater</b>				
<b>(a) Physical Tests</b>				
1	Temperature	Yes		
2	Colour	No		
3	pH	Yes		
4	Turbidity	Yes		
5	Conductivity	Yes		
6	Total Solids	Yes		
7	Total Dissolved Solids (TDS)	Yes		
8	Total Suspended Solids (TSS)	Yes		
<b>(b) Inorganic Tests</b>				
<b>(i) General &amp; Non-metallic</b>				
1	Alkalinity	Yes		
2	Chloride	Yes		
3	Cyanide	No		
4	Dissolved oxygen	Yes		
5	Nitrite nitrogen	Yes		

6	Nitrate nitrogen	Yes
7	Ammonical nitrogen	Yes
8	Fluoride	Yes
9	Hardness (Total)	Yes
10	Calcium	Yes
11	Magnesium	Yes
12	Phosphate	Yes
13	Sulphate	Yes
14	Sulphide	No
15	Total Residual chlorine (TRC)	Yes

**(ii) Trace Metals Tests**

1	Aluminium (Al)	No
2	Arsenic (As) Total	No
3	Barium	No
4	Boron	Yes
5	Chromium (Cr) Hexavalent	No
6	Chromium (Cr) Total	No
7	Cadmium (Cd)	No
8	Cobalt (Co)	No
9	Copper (Cu)	No
10	Iron (Fe)	Yes
11	Lead (Pb)	No
12	Manganese (Mn)	No
13	Mercury (Hg)	No
14	Nickel (Ni)	No
15	Potassium (K)	Yes
16	Sodium (Na)	Yes
17	Vanadium (V)	No
18	Zinc (Zn)	No
19	Selenium (Se)	No

**(c) Organics (General) and Trace Organics Tests**

1	Biological Oxygen Demand (BOD)	Yes
2	Chemical oxygen demand (COD)	Yes
3	Oil & Grease	Yes
4	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	No
5	Benzopyrene	No

**6 Pesticides****6.a Organochlorine Pesticides (OCPs) Tests**

i	Aldrin	No
ii	Alpha Endosulphan	No
iii	p,p'-DDT	No
iv	Alpha-HCH	No
v	Beta HCH	No
vi	Beta Endosulphan	No
vii	Gama-HCH	No
viii	o,p'-DDT	No
ix	p,p'-DDE	No

**6.b Organophosphorus Pesticides (OPPs) Tests**

i	Malathion	No
ii	Methyl parathion	No
iii	Chlorpyriphos	No
iv	Dimethoate	No
v	Dieldrin	No
vi	Ethion	No

**(d) Microbiological Tests**

1	Total Coliform	Yes
2	Faecal Coliform	Yes
3	E. Coli	Yes
4	Faecal Streptococci	Yes

**(e) Toxicological Tests**

1	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	No
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**B. Sample Matrix / Group of Solid / Solid Waste**

**(a) Soil / Sediment / Compost Tests**

1	Cation Exchange Capacity (CEC)	No
2	Electrical Conductivity (EC)	No
3	Organic carbon (Chemical Method )	No
4	pH	No
5	Soil moisture	No
6	Total nitrogen	No
7	Metals by digestion (As, Cd, Cr, Pb, Ni etc.)	No

**(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests**

1	Corrosivity	No
2	Ignitability (Flash Point)	No
3	Loss on Drying at 1050C (% Moisture Content)	No
4	Loss on Drying at 5500C (% Organic Content)	No
5	pH	No
6	Organic carbon/matter (Chemical Method )	No
7	Calorific Value	No
8	Toxicity Characteristics leaching procedure (TCLP) Leachate and Metals in Leachate (As,Cd,Cr, Pb, Ni)	No

**C. Sample Matrix / Group of Analytes: Air****(a) Ambient Air**

1	Nitrogen dioxide as NO2	Yes
2	Sulphur dioxide (SO2)	Yes
3	Particulate matter (PM10)	Yes
4	Particulate matter (PM2.5)	Yes
5	Carbon Monoxide	Yes
6	Ozone	Yes
7	Benzene	Yes
8	Ammonia	Yes

9	Metals in Particulate Matter, Pb	No
10	Metals in Particulate Matter, As	No
11	Metals in Particulate Matter, Ni	No
12	Particulate Benzo-a-Pyrene (BaP)	No
<b>(b) Stack Gas / Stationary Source Emission</b>		
1	Particulate Matter	Yes
2	Sulphur Dioxide	Yes
3	Carbon Dioxide	Yes
4	Carbon Monoxide (NDIR based Method)	Yes
5	Temperature	Yes
6	Moisture	Yes
7	Oxygen	Yes
8	Oxides of Nitrogen	Yes
9	Halides (HCL/HF)	No
<b>(c) Noise Level</b>		
1	Ambient Noise level measurement (20 to 140 dB)	Yes
2	Source Noise Level Measurement (Industrial process, DG set- 20 to 140dB)	Yes
<b>(d) Meteorological Monitoring</b>		
1	Ambient Temperature	Yes
2	Wind direction	Yes
3	Wind speed	Yes
4	Relative Humidity	Yes
5	Mixing Height	No

Specific remarks, if any:

## PART II: Details of Laboratory Infrastructure (Instruments and Equipment)

S. No.	Name of Instrument / Equipments	Available Yes / No	If the Instrument / Equipment is not available, Specify Timeline for procurement of this instrument (in months)	Action Taken for procurement of this Instrument / Equipment (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>				
<b>a ) Mandatory Requirements</b>				
1	Portable / Pen type pH meter / pH strip	Yes		
2	Portable Dissolved Oxygen Meter / Field Fixing using chemicals	Yes		
3	Electrical Conductivity meter pen type	Yes		
4	Flow meter / Physical flow measuring	Yes		
5	GPS / Mobile with GPS app	Yes		
6	Ice Box (2 nos.) (150 litre & 100 litre capacities)	Yes		
7	Thermometer	Yes		
8	Stainless steel bucket with nylon rope and mug	Yes		
9	Ground water level measuring device	Yes		
10	Scoop / shovel	Yes		
11	Auger / core sampler	No		
<b>b) Optional Requirements</b>				
1	Bottom Sampler / Depth sampler	No		
2	Chloroscope for residual chlorine	No		
3	Vandorn or equivalent water sampler (Automatic sampler when composite sampling to be done)	No		

4	Ekman Dredge	No
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**B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring**

**a) Mandatory Requirements**

1	Fine dust samplers PM2.5 (*4 Nos)	Yes
2	Respirable Dust Sampler PM 10 (* 4 Nos)	Yes
3	High Volume Sampler ( SPM ) (4 Nos)	No
4	Handy Sampler with set of glass impingers (*2 Nos)	Yes
5	Low Volume Sampler (LVS)	No
6	Tedler bags different sizes	Yes
7	Meteorological tower (All in one telescopic Mast) with sensors comprising wind speed, wind direction, ambient temp., Relative humidity, Solar radiation, rainfall etc.	Yes
8	Nitrogen Cylinder portable	Yes
9	Activated Charcoal tubes/ Tenex	No
10	Barometer (Digital)	Yes
11	Isokinetic Stack Monitoring Kit complete with Stack monitoring instrument panel with inclined cum vertical manometer, Cold Box, Vacuum pump, Glass assembly impingers	Yes
12	Modified S type Stainless steel Pitot tube (Standard length) with Assembly	Yes
13	Monoblock type, rotary design vacuum pump	No
14	Orsat Apparatus	No

15	Source emission monitoring Impingers train set with spare impingers 100 ml & 225 ml capacity	Yes
16	Stainless steel heated Sampling Probes with thimble holders short and long	Yes
17	Flue Gas analyzer	Yes
18	Thermometer/ Thermocouple	Yes
19	Calibrator for Noise Meters	Yes
20	Digital Sound level ( Noise ) Metres	No
21	Portable TOC Analyzer for emission monitoring.	No
22	Polyurethane Foam PUF Sampler	Yes
<b>b) Optional Requirements</b>		
1	Anemometer	Yes
2	Weather Monitoring system	Yes
3	Wind speed/wind direction monitor	Yes
4	Continuous Ambient Air Monitoring System, Fixed	Yes
5	Continuous PM10 Analyzer	Yes
6	Continuous Ambient Air Monitoring System, Mobile	No
7	Continuous PM2.5 analyzer	Yes
8	Ambient Nitrogen Oxides (NO-NO2- NOx Analyzer	Yes
9	Ambient Ozone Analyzer	Yes
10	Ambient BTEX Analyzer	Yes
11	Multipoint Gas Calibration system	Yes
12	Ambient Sulphur Dioxide analyzer	Yes
13	Ambient Carbon Monoxide & Carbon dioxide analyzer	Yes
14	Total Hydrocarbon analyzer	Yes

15	Ambient Ammonia analyzer	Yes
16	Zero Gas Generator	No
17	Synthetic Air Cylinder	No
18	Calibration Gas Cylinders, SO <sub>2</sub> , NO, CO, NH <sub>3</sub> , Benzene and Toluene One each with stainless steel Regulators	No
19	Continuous emission monitoring equipment	No
20	19 inch Rack mounting system for air analyzers	Yes
21	Dry Gas Meter	No
22	Diesel Exhaust analyzer	Yes
23	Exhaust CO/HC analyzer with Sampling Probe	Yes
24	Automated Noise Monitoring System	No
25	Integrating Sound level meter	Yes
26	Continuous PM <sub>10</sub> & PM <sub>2.5</sub> Monitoring Analyzer TEOM system	Yes
27	Top loading orifice kit for calibration of HVS	No
28	Permeation tubes (SO <sub>2</sub> , NO-NO <sub>2</sub> - NO <sub>x</sub> , NH <sub>3</sub> , BTX)	No

**C. List of Equipment required for processing of Environmental Samples:**

**a) Mandatory Requirements**

1	Accelerated Solvent Extraction (ASE) System	No
2	Ammonia distillation assembly/TKN Analyzer	Yes
3	Analytical Balance 4/5 digit & 6 digit (Digital)	Yes

4	Aquarium for Toxicity bioassay test with complete accessories (*4 Nos)	No
5	Autoclave (*2 Nos)	Yes
6	Bacteriological Incubators Stainless steel (*2 Nos)	Yes
7	Bio safety cabinets	No
8	BOD Incubators (2 nos.)	Yes
9	Centrifuge	Yes
10	COD Digestion heated Blocks (2) with capacity 16 nos. or more	Yes
11	Cyanide Distillation Assembly (3)	No
12	Deep Freezer- Capacity 500 litre	Yes
13	Laboratory Ball Mill Grinder	No
14	Laboratory Grinder	No
15	Laminar Flow bench for Microbiological analysis	Yes
16	Magnetic Stirrer with heating system (*2 Nos)	Yes
17	Mechanical Shaker	Yes
18	Membrane Filtration assembly with vacuum pump (2 nos.)	Yes
19	Microbial culture refrigerator	Yes
20	Microwave Digester with 16 vessels/ Hot Plate	No
21	Muffle Furnace (*1 Nos), Range 1200 C	Yes
22	Phenol distillation assembly (3)	No
23	Plate counter, Manual/Automatic	Yes
24	Digestion Chambers/ Fume hood	Yes
25	Digital Thermometer & Humidity meter- All lab area	Yes
26	Dispensers (Various capacities ) up to 5, 10, 25 & 50 ml	Yes

27	Filtration Assembly with vacuum pump	Yes
28	Fluoride Distillation Assembly (3)	No
29	Arsenic / Fluoride Glass Distillation assemblies	No
30	Glass Double Distillation Assembly /Water Purification System	Yes
31	Heating mantles (2 nos.)	No
32	Hot plates (small, Medium and Large ) (*2 nos.)	Yes
33	Thermo Hygrometer	Yes
34	Imhoff Cone	No
35	Top loading Precision Digital Balance (minimum detection 0.001mg/0.01 mg) with anti-vibration facility- 3 nos. i.e 4/5 Digit (2 nos), - 6 Digit (1 no)	Yes
36	Refrigerators Big Size 300 litres or more, double door- 2 nos.	Yes
37	Rotary Evaporator (Buchi type) with water recirculating chiller	No
38	Separating funnel shaker	Yes
39	Soxhlet Apparatus	No
40	Solid Phase Extraction (SPE) /SPME Extraction system	No
41	Thermometer (Alcohol)	Yes
42	Dry & wet bulb Thermometer	No
43	Toxicity characteristic leaching procedure (TCLP) Extractors (Zero head and Bottle)	No
44	Ultra sonic water bath- Capacity 3 litre	No

45	Water Bath with temperature control (*2 Nos)	Yes
46	Water Bath with temp. for mercury sample digestion- 20 BOD Bottles	No

#### D. Analytical Instruments at Environmental Laboratories

##### a) Mandatory Requirements

1	Atomic Absorption spectrometer (AAS)- Flame, Hydride & Graphite Tube Atomizer (GTA)	No
2	Binocular Stereo Zoom Microscope	No
3	Bomb Calorimeter	No
4	BTX Analyzer with BTX calibrator	No
5	Colony counter	Yes
6	Conductivity meter- 2 nos.	Yes
7	Environment conditioning chamber	No
8	Digital Burettes- 50 ml*2, 100 ml*2	No
9	Dissolved Oxygen Meter (Bench model)	No
10	Flame Photometer	Yes
11	Flash Point Apparatus	No
12	Gas Chromatograph Mass Spectrometer	No
13	High Performance Liquid Chromatograph (HPLC)	No
14	Inductively Coupled Plasma (ICP) Spectrometer-OES	No
15	Ion Chromatograph Anion & Cations	No
16	Methane and Non Methane (NMHC) Analyzer	Yes
17	Microscope – 100x	No
18	Microscope Binocular Research	No
19	CO (NDIR based) Analyzer	Yes

20	Nephelometer (Turbidity Meter)	Yes
21	pH-Meter with combined electrode (3 point)- 2 nos.	Yes
22	Specific ion Analyzer with ion selective electrodes	No
23	Spectrophotometer Visible (Portable)	No
24	TKN Analyzer semi-automatic with aluminum block digester	No
25	UV-Vis Spectrophotometer	Yes
26	Moisture Content Analyzer	No

**b) Optional Requirements**

1	Automatic Titration Assembly	Yes
2	Carbon, Hydrogen, Nitrogen and Sulphur (CHNS) Elemental Analyzer	No
3	EDXRF Analyzer/WDXRF Analyzer	No
4	Fourier-transform infrared Spectrometer (FTIR)	No
5	Flocculator ( Jar testing apparatus)	No
6	Toxic Gas Analyzer	No
7	Organic Halogen (AOX/TOX) Analyzer	No
8	TOC Analyzer	No
9	High Resolution Mass Spectrometer (HRGC-HRMS)	No
10	Inductively Coupled Plasma Mass (ICP-MS) Spectrometer	No
11	X Ray Fluorescence (XRF) Spectrometer (Portable)	No

**PART I: Facility available for monitoring of environmental parameters:**

Parameters	Total Number of Parameters	Facility available for	Facility not available for	
<b>A. Sample Matrix / Group of Water and Wastewater</b>	<b>67</b>	<b>31</b>	<b>36</b>	<b>0</b>
(a) Physical Tests	8	7	1	0
(b) Inorganic Tests	<b>34</b>	<b>17</b>	<b>17</b>	
(i) General & Non-metallic	15	13	2	0
(ii) Trace Metals Tests	19	4	15	0
(c) Organics (General) and Trace Organics Tests	<b>20</b>	<b>3</b>	<b>17</b>	<b>0</b>
Pesticides	15	0	15	0
Organochlorine Pesticides (OCPs) Tests	9	0	9	0
Organophosphorus Pesticides (OPPs) Tests	6	0	6	0
(d) Microbiological Tests	<b>4</b>	<b>4</b>	<b>0</b>	<b>0</b>
(e) Toxicological Tests	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>	<b>15</b>	<b>0</b>	<b>15</b>	
(a) Soil / Sediment / Compost Tests	7	0	7	0
(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests	8	0	8	0
<b>C. Sample Matrix / Group of Analytes: Air</b>	<b>28</b>	<b>22</b>	<b>6</b>	
(a) Ambient Air	12	8	4	0
(b) Stack Gas / Stationary Source Emission	9	8	1	0
(c) Noise Level	2	2	0	0
(d) Meteorological Monitoring	5	4	1	0

**PART II: Details of Laboratory Infrastructure (Instruments and Equipment)**

Name of Instrument / Equipments	Total Numbers	Number of Available	Number of Not Available	
<b>Total</b>	<b>148</b>	<b>80</b>	<b>68</b>	<b>0</b>
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>	<b>15</b>	<b>10</b>	<b>5</b>	
a ) Mandatory Requirements	11	10	1	0
b) Optional Requirements	4	0	4	0
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>	<b>50</b>	<b>34</b>	<b>16</b>	
a) Mandatory Requirements	22	15	7	0
b) Optional Requirements	28	19	9	0
<b>C. List of Equipment required for processing of Environmental Samples:</b>	<b>46</b>	<b>27</b>	<b>19</b>	
a) Mandatory Requirements	46	27	19	0
<b>D. Analytical Instruments at Environmental Laboratories</b>	<b>37</b>	<b>9</b>	<b>28</b>	
a) Mandatory Requirements	26	8	18	0
b) Optional Requirements	11	1	10	0

**Note: It is requested to please ensure that each sheet is created separately for each laboratory and rename the sheet accordingly . For e.g. Central Laboratory, Regional Laboratory etc**

### LABORATORY ANALYTICAL FACILITIES

**Name of the Board / Committee: Regional Laboratory Rewa, Madhya Pradesh Pollution Control Board M.P (RO Rewa)**

#### **PART I: Facility available for monitoring of environmental parameters:**

<b>S. No.</b>	<b>Parameters</b>	<b>Facilities Available (Yes / No)</b>	<b>If facility is not available, Specify Timeline for addition of this parameter. (in months)</b>	<b>Action Taken for addition of this parameter (Specification finalized / procurement initiated / work awarded / outsourced )</b>
<b>A. Sample Matrix / Group of Water and Wastewater</b>				
<b>(a) Physical Tests</b>				
1	Temperature	Yes		
2	Colour	Yes		
3	pH	Yes		
4	Turbidity	Yes		
5	Conductivity	Yes		
6	Total Solids	Yes		
7	Total Dissolved Solids (TDS)	Yes		
8	Total Suspended Solids (TSS)	Yes		
<b>(b) Inorganic Tests</b>				
<b>(i) General &amp; Non-metallic</b>				
1	Alkalinity	Yes		
2	Chloride	Yes		
3	Cyanide	No		
4	Dissolved oxygen	Yes		
5	Nitrite nitrogen	Yes		

6	Nitrate nitrogen	Yes
7	Ammonical nitrogen	Yes
8	Fluoride	Yes
9	Hardness (Total)	Yes
10	Calcium	Yes
11	Magnesium	Yes
12	Phosphate	Yes
13	Sulphate	Yes
14	Sulphide	No
15	Total Residual chlorine (TRC)	No

**(ii) Trace Metals Tests**

1	Aluminium (Al)	No
2	Arsenic (As) Total	No
3	Barium	No
4	Boron	No
5	Chromium (Cr) Hexavalent	No
6	Chromium (Cr) Total	No
7	Cadmium (Cd)	No
8	Cobalt (Co)	No
9	Copper (Cu)	No
10	Iron (Fe)	No
11	Lead (Pb)	No
12	Manganese (Mn)	No
13	Mercury (Hg)	No
14	Nickel (Ni)	No
15	Potassium (K)	No
16	Sodium (Na)	No
17	Vanadium (V)	No
18	Zinc (Zn)	No
19	Selenium (Se)	No

Samples are  
sent to Central  
Laboratory  
Bhopal

**(c) Organics (General) and Trace Organics Tests**

1	Biological Oxygen Demand (BOD)	Yes
2	Chemical oxygen demand (COD)	Yes
3	Oil & Grease	Yes
4	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	No
5	Benzopyrene	No

**6 Pesticides****6.a Organochlorine Pesticides (OCPs) Tests**

i	Aldrin	No
ii	Alpha Endosulphan	No
iii	p,p'-DDT	No
iv	Alpha-HCH	No
v	Beta HCH	No
vi	Beta Endosulphan	No
vii	Gama-HCH	No
viii	o,p'-DDT	No
ix	p,p'-DDE	No

**6.b Organophosphorus Pesticides (OPPs) Tests**

i	Malathion	No
ii	Methyl parathion	No
iii	Chlorpyrifos	No
iv	Dimethoate	No
v	Dieldrin	No
vi	Ethion	No

**(d) Microbiological Tests**

1	Total Coliform	Yes
2	Faecal Coliform	Yes
3	E. Coli	Yes
4	Faecal Streptococci	Yes

**(e) Toxicological Tests**

1	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	No
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**B. Sample Matrix / Group of Solid / Solid Waste**

Samples are  
sent to Central  
Laboratory  
Bhopal

**(a) Soil / Sediment / Compost Tests**

1	Cation Exchange Capacity (CEC)	No
2	Electrical Conductivity (EC)	No
3	Organic carbon (Chemical Method )	No
4	pH	Yes
5	Soil moisture	No
6	Total nitrogen	No
7	Metals by digestion (As, Cd, Cr, Pb, Ni etc.)	No

**(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests**

1	Corrosivity	No
2	Ignitability (Flash Point)	No
3	Loss on Drying at 1050C (% Moisture Content)	No
4	Loss on Drying at 5500C (% Organic Content)	No
5	pH	No
6	Organic carbon/matter (Chemical Method )	No
7	Calorific Value	No
8	Toxicity Characteristics leaching procedure (TCLP) Leachate and Metals in Leachate (As,Cd,Cr, Pb, Ni)	No

**C. Sample Matrix / Group of Analytes: Air****(a) Ambient Air**

1	Nitrogen dioxide as NO <sub>2</sub>	Yes
2	Sulphur dioxide (SO <sub>2</sub> )	Yes
3	Particulate matter (PM <sub>10</sub> )	Yes
4	Particulate matter (PM <sub>2.5</sub> )	Yes
5	Carbon Monoxide	No
6	Ozone	Yes
7	Benzene	No
8	Ammonia	Yes

9	Metals in Particulate Matter, Pb	No
10	Metals in Particulate Matter, As	No
11	Metals in Particulate Matter, Ni	No
12	Particulate Benzo-a-Pyrene (BaP)	No
<b>(b) Stack Gas / Stationary Source Emission</b>		
1	Particulate Matter	Yes
2	Sulphur Dioxide	Yes
3	Carbon Dioxide	No
4	Carbon Monoxide (NDIR based Method)	No
5	Temperature	Yes
6	Moisture	No
7	Oxygen	No
8	Oxides of Nitrogen	No
9	Halides (HCL/HF)	No
<b>(c) Noise Level</b>		
1	Ambient Noise level measurement (20 to 140 dB)	Yes
2	Source Noise Level Measurement (Industrial process, DG set- 20 to 140dB)	Yes
<b>(d) Meteorological Monitoring</b>		
1	Ambient Temperature	Yes
2	Wind direction	No
3	Wind speed	No
4	Relative Humidity	No
5	Mixing Height	No

Specific remarks, if any:

## PART II: Details of Laboratory Infrastructure (Instruments and Equipment)

S. No.	Name of Instrument / Equipments	Available Yes / No	If the Instrument / Equipment is not available, Specify Timeline for procurement of this instrument (in months)	Action Taken for procurement of this Instrument / Equipment (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>				
<b>a ) Mandatory Requirements</b>				
1	Portable / Pen type pH meter / pH strip	Yes		
2	Portable Dissolved Oxygen Meter / Field Fixing using chemicals	Yes		
3	Electrical Conductivity meter pen type	No		
4	Flow meter / Physical flow measuring	No		
5	GPS / Mobile with GPS app	Yes		
6	Ice Box (2 nos.) (150 litre & 100 litre capacities)	Yes		
7	Thermometer	Yes		
8	Stainless steel bucket with nylon rope and mug	Yes		
9	Ground water level measuring device	No		
10	Scoop / shovel	No		
11	Auger / core sampler	No		
<b>b) Optional Requirements</b>				
1	Bottom Sampler / Depth sampler	Yes		
2	Chloroscope for residual chlorine	No		
3	Vandorn or equivalent water sampler (Automatic sampler when composite sampling to be done)	No		

4	Ekman Dredge	No
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**B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring**

**a) Mandatory Requirements**

1	Fine dust samplers PM2.5 (*4 Nos)	Yes
2	Respirable Dust Sampler PM 10 (* 4 Nos)	Yes
3	High Volume Sampler ( SPM ) (4 Nos)	Yes
4	Handy Sampler with set of glass impingers (*2 Nos)	No
5	Low Volume Sampler (LVS)	No
6	Tedler bags different sizes	No
7	Meteorological tower (All in one telescopic Mast) with sensors comprising wind speed, wind direction, ambient temp., Relative humidity, Solar radiation, rainfall etc.	No
8	Nitrogen Cylinder portable	No
9	Activated Charcoal tubes/ Tenex	No
10	Barometer (Digital)	No
11	Isokinetic Stack Monitoring Kit complete with Stack monitoring instrument panel with inclined cum vertical manometer, Cold Box, Vacuum pump, Glass assembly impingers	Yes
12	Modified S type Stainless steel Pitot tube (Standard length) with Assembly	Yes
13	Monoblock type, rotary design vacuum pump	No
14	Orsat Apparatus	No

15	Source emission monitoring Impingers train set with spare impingers 100 ml & 225 ml capacity	Yes
16	Stainless steel heated Sampling Probes with thimble holders short and long	Yes
17	Flue Gas analyzer	Yes
18	Thermometer/ Thermocouple	Yes
19	Calibrator for Noise Meters	Yes
20	Digital Sound level ( Noise ) Metres	Yes
21	Portable TOC Analyzer for emission monitoring.	No
22	Polyurethane Foam PUF Sampler	No

**b) Optional Requirements**

1	Anemometer	No
2	Weather Monitoring system	No
3	Wind speed/wind direction monitor	No
4	Continuous Ambient Air Monitoring System, Fixed	No
5	Continuous PM10 Analyzer	No
6	Continuous Ambient Air Monitoring System, Mobile	No
7	Continuous PM2.5 analyzer	No
8	Ambient Nitrogen Oxides (NO-NO2- NOx Analyzer	No
9	Ambient Ozone Analyzer	No
10	Ambient BTEX Analyzer	No
11	Multipoint Gas Calibration system	No
12	Ambient Sulphur Dioxide analyzer	No
13	Ambient Carbon Monoxide & Carbon dioxide analyzer	No
14	Total Hydrocarbon analyzer	No

15	Ambient Ammonia analyzer	No
16	Zero Gas Generator	No
17	Synthetic Air Cylinder	No
18	Calibration Gas Cylinders, SO <sub>2</sub> , NO, CO, NH <sub>3</sub> , Benzene and Toluene One each with stainless steel Regulators	No
19	Continuous emission monitoring equipment	No
20	19 inch Rack mounting system for air analyzers	No
21	Dry Gas Meter	No
22	Diesel Exhaust analyzer	No
23	Exhaust CO/HC analyzer with Sampling Probe	Yes
24	Automated Noise Monitoring System	No
25	Integrating Sound level meter	No
26	Continuous PM <sub>10</sub> & PM <sub>2.5</sub> Monitoring Analyzer TEOM system	No
27	Top loading orifice kit for calibration of HVS	No
28	Permeation tubes (SO <sub>2</sub> , NO-NO <sub>2</sub> -NO <sub>x</sub> , NH <sub>3</sub> , BTX)	No

**C. List of Equipment required for processing of Environmental Samples:**

**a) Mandatory Requirements**

1	Accelerated Solvent Extraction (ASE) System	No
2	Ammonia distillation assembly/TKN Analyzer	Yes
3	Analytical Balance 4/5 digit & 6 digit (Digital)	Yes

4	Aquarium for Toxicity bioassay test with complete accessories (*4 Nos)	No
5	Autoclave (*2 Nos)	Yes
6	Bacteriological Incubators Stainless steel (*2 Nos)	Yes
7	Bio safety cabinets	No
8	BOD Incubators (2 nos.)	Yes
9	Centrifuge	No
10	COD Digestion heated Blocks (2) with capacity 16 nos. or more	Yes
11	Cyanide Distillation Assembly (3)	No
12	Deep Freezer- Capacity 500 litre	No
13	Laboratory Ball Mill Grinder	No
14	Laboratory Grinder	No
15	Laminar Flow bench for Microbiological analysis	Yes
16	Magnetic Stirrer with heating system (*2 Nos)	No
17	Mechanical Shaker	No
18	Membrane Filtration assembly with vacuum pump (2 nos.)	No
19	Microbial culture refrigerator	No
20	Microwave Digester with 16 vessels/ Hot Plate	No
21	Muffle Furnace (*1 Nos), Range 1200 C	Yes
22	Phenol distillation assembly (3)	No
23	Plate counter, Manual/Automatic	No
24	Digestion Chambers/ Fume hood	No
25	Digital Thermometer & Humidity meter- All lab area	No
26	Dispensers (Various capacities ) up to 5, 10, 25 & 50 ml	No

27	Filtration Assembly with vacuum pump	Yes
28	Fluoride Distillation Assembly (3)	No
29	Arsenic / Fluoride Glass Distillation assemblies	No
30	Glass Double Distillation Assembly /Water Purification System	No
31	Heating mantles (2 nos.)	No
32	Hot plates (small, Medium and Large ) (*2 nos.)	No
33	Thermo Hygrometer	No
34	Imhoff Cone	No
35	Top loading Precision Digital Balance (minimum detection 0.001mg/0.01 mg) with anti-vibration facility- 3 nos. i.e 4/5 Digit (2 nos), - 6 Digit (1 no)	No
36	Refrigerators Big Size 300 litres or more, double door- 2 nos.	No
37	Rotary Evaporator (Buchi type) with water recirculating chiller	No
38	Separating funnel shaker	No
39	Soxhlet Apparatus	No
40	Solid Phase Extraction (SPE) /SPME Extraction system	No
41	Thermometer (Alcohol)	No
42	Dry & wet bulb Thermometer	No
43	Toxicity characteristic leaching procedure (TCLP) Extractors (Zero head and Bottle)	No
44	Ultra sonic water bath- Capacity 3 litre	No

45	Water Bath with temperature control (*2 Nos)	Yes
46	Water Bath with temp. for mercury sample digestion- 20 BOD Bottles	No

#### **D. Analytical Instruments at Environmental Laboratories**

##### **a) Mandatory Requirements**

1	Atomic Absorption spectrometer (AAS)- Flame, Hydride & Graphite Tube Atomizer (GTA)	No
2	Binocular Stereo Zoom Microscope	No
3	Bomb Calorimeter	No
4	BTX Analyzer with BTX calibrator	No
5	Colony counter	No
6	Conductivity meter- 2 nos.	Yes
7	Environment conditioning chamber	No
8	Digital Burettes- 50 ml*2, 100 ml*2	No
9	Dissolved Oxygen Meter (Bench model)	No
10	Flame Photometer	Yes
11	Flash Point Apparatus	No
12	Gas Chromatograph Mass Spectrometer	No
13	High Performance Liquid Chromatograph (HPLC)	No
14	Inductively Coupled Plasma (ICP) Spectrometer-OES	No
15	Ion Chromatograph Anion & Cations	No
16	Methane and Non Methane (NMHC) Analyzer	No
17	Microscope – 100x	No
18	Microscope Binocular Research	No
19	CO (NDIR based) Analyzer	No

20	Nephelometer (Turbidity Meter)	Yes
21	pH-Meter with combined electrode (3 point)- 2 nos.	Yes
22	Specific ion Analyzer with ion selective electrodes	No
23	Spectrophotometer Visible (Portable)	No
24	TKN Analyzer semi-automatic with aluminum block digester	Yes
25	UV-Vis Spectrophotometer	Yes
26	Moisture Content Analyzer	No
<b>b) Optional Requirements</b>		
1	Automatic Titration Assembly	No
2	Carbon, Hydrogen, Nitrogen and Sulphur (CHNS) Elemental Analyzer	No
3	EDXRF Analyzer/WDXRF Analyzer	No
4	Fourier-transform infrared Spectrometer (FTIR)	No
5	Flocculator ( Jar testing apparatus)	No
6	Toxic Gas Analyzer	No
7	Organic Halogen (AOX/TOX) Analyzer	No
8	TOC Analyzer	No
9	High Resolution Mass Spectrometer (HRGC-HRMS)	No
10	Inductively Coupled Plasma Mass (ICP-MS) Spectrometer	No
11	X Ray Fluorescence (XRF) Spectrometer (Portable)	No

## PART I: Facility available for monitoring of environmental parameters:

Parameters	Total Number of Parameters	Facility available for	Facility not available for	
<b>A. Sample Matrix / Group of Water and Wastewater</b>	<b>67</b>	<b>27</b>	<b>40</b>	<b>0</b>
(a) Physical Tests	8	8	0	0
(b) Inorganic Tests	<b>34</b>	<b>12</b>	<b>22</b>	
(i) General & Non-metallic	15	12	3	0
(ii) Trace Metals Tests	19	0	19	0
(c) Organics (General) and Trace Organics Tests	<b>20</b>	<b>3</b>	<b>17</b>	<b>0</b>
Pesticides	15	0	15	0
Organochlorine Pesticides (OCPs) Tests	9	0	9	0
Organophosphorus Pesticides (OPPs) Tests	6	0	6	0
(d) Microbiological Tests	<b>4</b>	<b>4</b>	<b>0</b>	<b>0</b>
(e) Toxicological Tests	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>	<b>15</b>	<b>1</b>	<b>14</b>	
(a) Soil / Sediment / Compost Tests	7	1	6	0
(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests	8	0	8	0
<b>C. Sample Matrix / Group of Analytes: Air</b>	<b>28</b>	<b>12</b>	<b>16</b>	
(a) Ambient Air	12	6	6	0
(b) Stack Gas / Stationary Source Emission	9	3	6	0
(c) Noise Level	2	2	0	0
(d) Meteorological Monitoring	5	1	4	0

## PART II: Details of Laboratory Infrastructure (Instruments and Equipment)

Name of Instrument / Equipments	Total Numbers	Number of Available	Number of Not Available	
<b>Total</b>	<b>148</b>	<b>35</b>	<b>113</b>	<b>0</b>
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>	<b>15</b>	<b>7</b>	<b>8</b>	
a ) Mandatory Requirements	11	6	5	0
b) Optional Requirements	4	1	3	0
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>	<b>50</b>	<b>12</b>	<b>38</b>	
a) Mandatory Requirements	22	11	11	0
b) Optional Requirements	28	1	27	0
<b>C. List of Equipment required for processing of Environmental Samples:</b>	<b>46</b>	<b>10</b>	<b>36</b>	
a) Mandatory Requirements	46	10	36	0
<b>D. Analytical Instruments at Environmental Laboratories</b>	<b>37</b>	<b>6</b>	<b>31</b>	
a) Mandatory Requirements	26	6	20	0
b) Optional Requirements	11	0	11	0

**Note: It is requested to please ensure that each sheet is created separately for each laboratory and rename the sheet accordingly . For e.g. Central Laboratory, Regional Laboratory etc**

### LABORATORY ANALYTICAL FACILITIES

**Name of the Board / Committee: Regional Laboratory Shahdol, Madhya Pradesh Pollution Control Board M.P (RO Shahdol)**

#### **PART I: Facility available for monitoring of environmental parameters:**

<b>S. No.</b>	<b>Parameters</b>	<b>Facilities Available (Yes / No)</b>	<b>If facility is not available, Specify Timeline for addition of this parameter. (in months)</b>	<b>Action Taken for addition of this parameter (Specification finalized / procurement initiated / work awarded / outsourced )</b>
<b>A. Sample Matrix / Group of Water and Wastewater</b>				
<b>(a) Physical Tests</b>				
1	Temperature	Yes		
2	Colour	Yes		
3	pH	Yes		
4	Turbidity	Yes		
5	Conductivity	Yes		
6	Total Solids	Yes		
7	Total Dissolved Solids (TDS)	Yes		
8	Total Suspended Solids (TSS)	Yes		
<b>(b) Inorganic Tests</b>				
<b>(i) General &amp; Non-metallic</b>				
1	Alkalinity	Yes		
2	Chloride	Yes		
3	Cyanide	No		
4	Dissolved oxygen	Yes		
5	Nitrite nitrogen	Yes		

6	Nitrate nitrogen	Yes
7	Ammonical nitrogen	Yes
8	Fluoride	No
9	Hardness (Total)	Yes
10	Calcium	No
11	Magnesium	No
12	Phosphate	Yes
13	Sulphate	Yes
14	Sulphide	No
15	Total Residual chlorine (TRC)	No

**(ii) Trace Metals Tests**

1	Aluminium (Al)	No
2	Arsenic (As) Total	No
3	Barium	No
4	Boron	No
5	Chromium (Cr) Hexavalent	No
6	Chromium (Cr) Total	No
7	Cadmium (Cd)	No
8	Cobalt (Co)	No
9	Copper (Cu)	No
10	Iron (Fe)	No
11	Lead (Pb)	No
12	Manganese (Mn)	No
13	Mercury (Hg)	No
14	Nickel (Ni)	No
15	Potassium (K)	Yes
16	Sodium (Na)	Yes
17	Vanadium (V)	No
18	Zinc (Zn)	No
19	Selenium (Se)	No

Samples sent  
to Central  
Laboratory  
Bhopal

**(c) Organics (General) and Trace Organics Tests**

1	Biological Oxygen Demand (BOD)	Yes
2	Chemical oxygen demand (COD)	Yes
3	Oil & Grease	Yes
4	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	No
5	Benzopyrene	No

**6 Pesticides****6.a Organochlorine Pesticides (OCPs) Tests**

i	Aldrin	No
ii	Alpha Endosulphan	No
iii	p,p'-DDT	No
iv	Alpha-HCH	No
v	Beta HCH	No
vi	Beta Endosulphan	No
vii	Gama-HCH	No
viii	o,p'-DDT	No
ix	p,p'-DDE	No

**6.b Organophosphorus Pesticides (OPPs) Tests**

i	Malathion	No
ii	Methyl parathion	No
iii	Chlorpyrifos	No
iv	Dimethoate	No
v	Dieldrin	No
vi	Ethion	No

**(d) Microbiological Tests**

1	Total Coliform	Yes
2	Faecal Coliform	Yes
3	E. Coli	No
4	Faecal Streptococci	No

**(e) Toxicological Tests**

1	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	No
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**B. Sample Matrix / Group of Solid / Solid Waste**

Samples are  
sent to Central  
Laboratory  
Bhopal

**(a) Soil / Sediment / Compost Tests**

1	Cation Exchange Capacity (CEC)	No
2	Electrical Conductivity (EC)	No
3	Organic carbon (Chemical Method )	No
4	pH	Yes
5	Soil moisture	No
6	Total nitrogen	No
7	Metals by digestion (As, Cd, Cr, Pb, Ni etc.)	No

**(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests**

1	Corrosivity	No
2	Ignitability (Flash Point)	No
3	Loss on Drying at 1050C (% Moisture Content)	No
4	Loss on Drying at 5500C (% Organic Content)	No
5	pH	No
6	Organic carbon/matter (Chemical Method )	No
7	Calorific Value	No
8	Toxicity Characteristics leaching procedure (TCLP) Leachate and Metals in Leachate (As,Cd,Cr, Pb, Ni)	No

**C. Sample Matrix / Group of Analytes: Air****(a) Ambient Air**

1	Nitrogen dioxide as NO2	Yes
2	Sulphur dioxide (SO2)	Yes
3	Particulate matter (PM10)	Yes
4	Particulate matter (PM2.5)	Yes
5	Carbon Monoxide	Yes
6	Ozone	Yes
7	Benzene	No
8	Ammonia	Yes

9	Metals in Particulate Matter, Pb	No
10	Metals in Particulate Matter, As	No
11	Metals in Particulate Matter, Ni	No
12	Particulate Benzo-a-Pyrene (BaP)	No
<b>(b) Stack Gas / Stationary Source Emission</b>		
1	Particulate Matter	Yes
2	Sulphur Dioxide	Yes
3	Carbon Dioxide	Yes
4	Carbon Monoxide (NDIR based Method)	No
5	Temperature	Yes
6	Moisture	No
7	Oxygen	No
8	Oxides of Nitrogen	No
9	Halides (HCL/HF)	No
<b>(c) Noise Level</b>		
1	Ambient Noise level measurement (20 to 140 dB)	Yes
2	Source Noise Level Measurement (Industrial process, DG set- 20 to 140dB)	Yes
<b>(d) Meteorological Monitoring</b>		
1	Ambient Temperature	No
2	Wind direction	No
3	Wind speed	No
4	Relative Humidity	No
5	Mixing Height	No

Specific remarks, if any:

## PART II: Details of Laboratory Infrastructure (Instruments and Equipment)

S. No.	Name of Instrument / Equipments	Available Yes / No	If the Instrument / Equipment is not available, Specify Timeline for procurement of this instrument (in months)	Action Taken for procurement of this Instrument / Equipment (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>				
<b>a ) Mandatory Requirements</b>				
1	Portable / Pen type pH meter / pH strip	Yes		
2	Portable Dissolved Oxygen Meter / Field Fixing using chemicals	Yes		
3	Electrical Conductivity meter pen type	No		
4	Flow meter / Physical flow measuring	No		
5	GPS / Mobile with GPS app	Yes		
6	Ice Box (2 nos.) (150 litre & 100 litre capacities)	Yes		
7	Thermometer	Yes		
8	Stainless steel bucket with nylon rope and mug	Yes		
9	Ground water level measuring device	No		
10	Scoop / shovel	No		
11	Auger / core sampler	No		
<b>b) Optional Requirements</b>				
1	Bottom Sampler / Depth sampler	No		
2	Chloroscope for residual chlorine	No		
3	Vandorn or equivalent water sampler (Automatic sampler when composite sampling to be done)	No		

4	Ekman Dredge	No
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**B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring**

**a) Mandatory Requirements**

1	Fine dust samplers PM2.5 (*4 Nos)	Yes
2	Respirable Dust Sampler PM 10 (* 4 Nos)	Yes
3	High Volume Sampler ( SPM ) (4 Nos)	Yes
4	Handy Sampler with set of glass impingers (*2 Nos)	No
5	Low Volume Sampler (LVS)	No
6	Tedler bags different sizes	No
7	Meteorological tower (All in one telescopic Mast) with sensors comprising wind speed, wind direction, ambient temp., Relative humidity, Solar radiation, rainfall etc.	No
8	Nitrogen Cylinder portable	No
9	Activated Charcoal tubes/ Tenex	No
10	Barometer (Digital)	No
11	Isokinetic Stack Monitoring Kit complete with Stack monitoring instrument panel with inclined cum vertical manometer, Cold Box, Vacuum pump, Glass assembly impingers	Yes
12	Modified S type Stainless steel Pitot tube (Standard length) with Assembly	Yes
13	Monoblock type, rotary design vacuum pump	Yes
14	Orsat Apparatus	No

15	Source emission monitoring Impingers train set with spare impingers 100 ml & 225 ml capacity	Yes
16	Stainless steel heated Sampling Probes with thimble holders short and long	No
17	Flue Gas analyzer	Yes
18	Thermometer/ Thermocouple	Yes
19	Calibrator for Noise Meters	Yes
20	Digital Sound level ( Noise ) Metres	Yes
21	Portable TOC Analyzer for emission monitoring.	No
22	Polyurethane Foam PUF Sampler	No

**b) Optional Requirements**

1	Anemometer	No
2	Weather Monitoring system	No
3	Wind speed/wind direction monitor	No
4	Continuous Ambient Air Monitoring System, Fixed	Yes
5	Continuous PM10 Analyzer	Yes
6	Continuous Ambient Air Monitoring System, Mobile	No
7	Continuous PM2.5 analyzer	Yes
8	Ambient Nitrogen Oxides (NO-NO2- NOx Analyzer	Yes
9	Ambient Ozone Analyzer	Yes
10	Ambient BTEX Analyzer	No
11	Multipoint Gas Calibration system	Yes
12	Ambient Sulphur Dioxide analyzer	Yes
13	Ambient Carbon Monoxide & Carbon dioxide analyzer	Yes
14	Total Hydrocarbon analyzer	No

15	Ambient Ammonia analyzer	Yes
16	Zero Gas Generator	No
17	Synthetic Air Cylinder	No
18	Calibration Gas Cylinders, SO <sub>2</sub> , NO, CO, NH <sub>3</sub> , benzene and Toluene One each with stainless steel Regulators	No
19	Continuous emission monitoring equipment	Yes
20	19 inch Rack mounting system for air analyzers	Yes
21	Dry Gas Meter	No
22	Diesel Exhaust analyzer	Yes
23	Exhaust CO/HC analyzer with Sampling Probe	Yes
24	Automated Noise Monitoring System	Yes
25	Integrating Sound level meter	Yes
26	Continuous PM <sub>10</sub> & PM <sub>2.5</sub> Monitoring Analyzer TEOM system	Yes
27	Top loading orifice kit for calibration of HVS	No
28	Permeation tubes (SO <sub>2</sub> , NO-NO <sub>2</sub> - NO <sub>x</sub> , NH <sub>3</sub> , BTX)	Yes

**C. List of Equipment required for processing of Environmental Samples:**

**a) Mandatory Requirements**

1	Accelerated Solvent Extraction (ASE) System	No
2	Ammonia distillation assembly/TKN Analyzer	Yes
3	Analytical Balance 4/5 digit & 6 digit (Digital)	Yes

4	Aquarium for Toxicity bioassay test with complete accessories (*4 Nos)	No
5	Autoclave (*2 Nos)	Yes
6	Bacteriological Incubators Stainless steel (*2 Nos)	Yes
7	Bio safety cabinets	No
8	BOD Incubators (2 nos.)	Yes
9	Centrifuge	No
10	COD Digestion heated Blocks (2) with capacity 16 nos. or more	Yes
11	Cyanide Distillation Assembly (3)	No
12	Deep Freezer- Capacity 500 litre	No
13	Laboratory Ball Mill Grinder	No
14	Laboratory Grinder	No
15	Laminar Flow bench for Microbiological analysis	Yes
16	Magnetic Stirrer with heating system (*2 Nos)	Yes
17	Mechanical Shaker	No
18	Membrane Filtration assembly with vacuum pump (2 nos.)	No
19	Microbial culture refrigerator	No
20	Microwave Digester with 16 vessels/ Hot Plate	No
21	Muffle Furnace (*1 Nos), Range 1200 C	Yes
22	Phenol distillation assembly (3)	No
23	Plate counter, Manual/Automatic	No
24	Digestion Chambers/ Fume hood	Yes
25	Digital Thermometer & Humidity meter- All lab area	Yes
26	Dispensers (Various capacities ) up to 5, 10, 25 & 50 ml	Yes

27	Filtration Assembly with vacuum pump	No
28	Fluoride Distillation Assembly (3)	No
29	Arsenic / Fluoride Glass Distillation assemblies	No
30	Glass Double Distillation Assembly /Water Purification System	No
31	Heating mantles (2 nos.)	No
32	Hot plates (small, Medium and Large ) (*2 nos.)	No
33	Thermo Hygrometer	No
34	Imhoff Cone	No
35	Top loading Precision Digital Balance (minimum detection 0.001mg/0.01 mg) with anti-vibration facility- 3 nos. i.e 4/5 Digit (2 nos), - 6 Digit (1 no)	Yes
36	Refrigerators Big Size 300 litres or more, double door- 2 nos.	Yes
37	Rotary Evaporator (Buchi type) with water recirculating chiller	No
38	Separating funnel shaker	Yes
39	Soxhlet Apparatus	Yes
40	Solid Phase Extraction (SPE) /SPME Extraction system	No
41	Thermometer (Alcohol)	Yes
42	Dry & wet bulb Thermometer	No
43	Toxicity characteristic leaching procedure (TCLP) Extractors (Zero head and Bottle)	No
44	Ultra sonic water bath- Capacity 3 litre	No

45	Water Bath with temperature control (*2 Nos)	Yes
46	Water Bath with temp. for mercury sample digestion- 20 BOD Bottles	No

#### **D. Analytical Instruments at Environmental Laboratories**

##### **a) Mandatory Requirements**

1	Atomic Absorption spectrometer (AAS)- Flame, Hydride & Graphite Tube Atomizer (GTA)	No
2	Binocular Stereo Zoom Microscope	No
3	Bomb Calorimeter	No
4	BTX Analyzer with BTX calibrator	No
5	Colony counter	No
6	Conductivity meter- 2 nos.	Yes
7	Environment conditioning chamber	No
8	Digital Burettes- 50 ml*2, 100 ml*2	Yes
9	Dissolved Oxygen Meter (Bench model)	No
10	Flame Photometer	Yes
11	Flash Point Apparatus	No
12	Gas Chromatograph Mass Spectrometer	No
13	High Performance Liquid Chromatograph (HPLC)	No
14	Inductively Coupled Plasma (ICP) Spectrometer-OES	No
15	Ion Chromatograph Anion & Cations	No
16	Methane and Non Methane (NMHC) Analyzer	No
17	Microscope – 100x	No
18	Microscope Binocular Research	No
19	CO (NDIR based) Analyzer	Yes

20	Nephelometer (Turbidity Meter)	Yes
21	pH-Meter with combined electrode (3 point)- 2 nos.	Yes
22	Specific ion Analyzer with ion selective electrodes	No
23	Spectrophotometer Visible (Portable)	No
24	TKN Analyzer semi-automatic with aluminum block digester	Yes
25	UV-Vis Spectrophotometer	Yes
26	Moisture Content Analyzer	No
<b>b) Optional Requirements</b>		
1	Automatic Titration Assembly	Yes
2	Carbon, Hydrogen, Nitrogen and Sulphur (CHNS) Elemental Analyzer	No
3	EDXRF Analyzer/WDXRF Analyzer	No
4	Fourier-transform infrared Spectrometer (FTIR)	No
5	Flocculator ( Jar testing apparatus)	No
6	Toxic Gas Analyzer	No
7	Organic Halogen (AOX/TOX) Analyzer	No
8	TOC Analyzer	No
9	High Resolution Mass Spectrometer (HRGC-HRMS)	No
10	Inductively Coupled Plasma Mass (ICP-MS) Spectrometer	No
11	X Ray Fluorescence (XRF) Spectrometer (Portable)	No

## PART I: Facility available for monitoring of environmental parameters:

Parameters	Total Number of Parameters	Facility available for	Facility not available for	
<b>A. Sample Matrix / Group of Water and Wastewater</b>	<b>67</b>	<b>24</b>	<b>43</b>	<b>0</b>
(a) Physical Tests	8	8	0	0
(b) Inorganic Tests	<b>34</b>	<b>11</b>	<b>23</b>	
(i) General & Non-metallic	15	9	6	0
(ii) Trace Metals Tests	19	2	17	0
(c) Organics (General) and Trace Organics Tests	<b>20</b>	<b>3</b>	<b>17</b>	<b>0</b>
Pesticides	15	0	15	0
Organochlorine Pesticides (OCPs) Tests	9	0	9	0
Organophosphorus Pesticides (OPPs) Tests	6	0	6	0
(d) Microbiological Tests	<b>4</b>	<b>2</b>	<b>2</b>	<b>0</b>
(e) Toxicological Tests	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>	<b>15</b>	<b>1</b>	<b>14</b>	
(a) Soil / Sediment / Compost Tests	7	1	6	0
(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests	8	0	8	0
<b>C. Sample Matrix / Group of Analytes: Air</b>	<b>28</b>	<b>13</b>	<b>15</b>	
(a) Ambient Air	12	7	5	0
(b) Stack Gas / Stationary Source Emission	9	4	5	0
(c) Noise Level	2	2	0	0
(d) Meteorological Monitoring	5	0	5	0

## PART II: Details of Laboratory Infrastructure (Instruments and Equipment)

Name of Instrument / Equipments	Total Numbers	Number of Available	Number of Not Available	
<b>Total</b>	<b>148</b>	<b>61</b>	<b>87</b>	<b>0</b>
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>	<b>15</b>	<b>6</b>	<b>9</b>	
a ) Mandatory Requirements	11	6	5	0
b) Optional Requirements	4	0	4	0
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>	<b>50</b>	<b>28</b>	<b>22</b>	
a) Mandatory Requirements	22	11	11	0
b) Optional Requirements	28	17	11	0
<b>C. List of Equipment required for processing of Environmental Samples:</b>	<b>46</b>	<b>18</b>	<b>28</b>	
a) Mandatory Requirements	46	18	28	0
<b>D. Analytical Instruments at Environmental Laboratories</b>	<b>37</b>	<b>9</b>	<b>28</b>	
a) Mandatory Requirements	26	8	18	0
b) Optional Requirements	11	1	10	0

**Note: It is requested to please ensure that each sheet is created separately for each laboratory and rename the sheet accordingly . For e.g. Central Laboratory, Regional Laboratory etc**

### LABORATORY ANALYTICAL FACILITIES

**Name of the Board / Committee: Regional Laboratory Singrauli, Madhya Pradesh Pollution Control Board M.P (RO Singrauli)**

#### **PART I: Facility available for monitoring of environmental parameters:**

<b>S. No.</b>	<b>Parameters</b>	<b>Facilities Available (Yes / No)</b>	<b>If facility is not available, Specify Timeline for addition of this parameter. (in months)</b>	<b>Action Taken for addition of this parameter (Specification finalized / procurement initiated / work awarded / outsourced )</b>
<b>A. Sample Matrix / Group of Water and Wastewater</b>				
<b>(a) Physical Tests</b>				
1	Temperature	Yes		
2	Colour	Yes		
3	pH	Yes		
4	Turbidity	No		
5	Conductivity	No		
6	Total Solids	No		
7	Total Dissolved Solids (TDS)	No		
8	Total Suspended Solids (TSS)	No		
<b>(b) Inorganic Tests</b>				
<b>(i) General &amp; Non-metallic</b>				
1	Alkalinity	No		
2	Chloride	No		
3	Cyanide	No		
4	Dissolved oxygen	No		
5	Nitrite nitrogen	No		

6	Nitrate nitrogen	No
7	Ammonical nitrogen	No
8	Fluoride	No
9	Hardness (Total)	No
10	Calcium	No
11	Magnesium	No
12	Phosphate	No
13	Sulphate	No
14	Sulphide	No
15	Total Residual chlorine (TRC)	No

**(ii) Trace Metals Tests**

1	Aluminium (Al)	No
2	Arsenic (As) Total	No
3	Barium	No
4	Boron	No
5	Chromium (Cr) Hexavalent	No
6	Chromium (Cr) Total	No
7	Cadmium (Cd)	No
8	Cobalt (Co)	No
9	Copper (Cu)	No
10	Iron (Fe)	No
11	Lead (Pb)	No
12	Manganese (Mn)	No
13	Mercury (Hg)	No
14	Nickel (Ni)	No
15	Potassium (K)	No
16	Sodium (Na)	No
17	Vanadium (V)	No
18	Zinc (Zn)	No
19	Selenium (Se)	No

Samples sent  
to Central  
Laboratory  
Bhopal

**(c) Organics (General) and Trace Organics Tests**

1	Biological Oxygen Demand (BOD)	No
2	Chemical oxygen demand (COD)	No
3	Oil & Grease	No
4	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	No
5	Benzopyrene	No

**6 Pesticides****6.a Organochlorine Pesticides (OCPs) Tests**

i	Aldrin	No
ii	Alpha Endosulphan	No
iii	p,p'-DDT	No
iv	Alpha-HCH	No
v	Beta HCH	No
vi	Beta Endosulphan	No
vii	Gama-HCH	No
viii	o,p'-DDT	No
ix	p,p'-DDE	No

**6.b Organophosphorus Pesticides (OPPs) Tests**

i	Malathion	No
ii	Methyl parathion	No
iii	Chlorpyrifos	No
iv	Dimethoate	No
v	Dieldrin	No
vi	Ethion	No

**(d) Microbiological Tests**

1	Total Coliform	No
2	Faecal Coliform	No
3	E. Coli	No
4	Faecal Streptococci	No

**(e) Toxicological Tests**

1	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	No
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**B. Sample Matrix / Group of Solid / Solid Waste**

Samples are  
sent to Central  
Laboratory  
Bhopal

**(a) Soil / Sediment / Compost Tests**

1	Cation Exchange Capacity (CEC)	No
2	Electrical Conductivity (EC)	No
3	Organic carbon (Chemical Method )	No
4	pH	No
5	Soil moisture	No
6	Total nitrogen	No
7	Metals by digestion (As, Cd, Cr, Pb, Ni etc.)	No

**(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests**

1	Corrosivity	No
2	Ignitability (Flash Point)	No
3	Loss on Drying at 1050C (% Moisture Content)	No
4	Loss on Drying at 5500C (% Organic Content)	No
5	pH	No
6	Organic carbon/matter (Chemical Method )	No
7	Calorific Value	No
8	Toxicity Characteristics leaching procedure (TCLP) Leachate and Metals in Leachate (As,Cd,Cr, Pb, Ni)	No

**C. Sample Matrix / Group of Analytes: Air****(a) Ambient Air**

1	Nitrogen dioxide as NO2	Yes
2	Sulphur dioxide (SO2)	Yes
3	Particulate matter (PM10)	Yes
4	Particulate matter (PM2.5)	Yes
5	Carbon Monoxide	Yes
6	Ozone	Yes
7	Benzene	No
8	Ammonia	Yes

9	Metals in Particulate Matter, Pb	No
10	Metals in Particulate Matter, As	No
11	Metals in Particulate Matter, Ni	No
12	Particulate Benzo-a-Pyrene (BaP)	No
<b>(b) Stack Gas / Stationary Source Emission</b>		
1	Particulate Matter	Yes
2	Sulphur Dioxide	Yes
3	Carbon Dioxide	Yes
4	Carbon Monoxide (NDIR based Method)	No
5	Temperature	Yes
6	Moisture	No
7	Oxygen	No
8	Oxides of Nitrogen	No
9	Halides (HCL/HF)	No
<b>(c) Noise Level</b>		
1	Ambient Noise level measurement (20 to 140 dB)	Yes
2	Source Noise Level Measurement (Industrial process, DG set- 20 to 140dB)	Yes
<b>(d) Meteorological Monitoring</b>		
1	Ambient Temperature	No
2	Wind direction	No
3	Wind speed	No
4	Relative Humidity	No
5	Mixing Height	No

Specific remarks, if any:

## PART II: Details of Laboratory Infrastructure (Instruments and Equipment)

S. No.	Name of Instrument / Equipments	Available Yes / No	If the Instrument / Equipment is not available, Specify Timeline for procurement of this instrument (in months)	Action Taken for procurement of this Instrument / Equipment (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>				
<b>a ) Mandatory Requirements</b>				
1	Portable / Pen type pH meter / pH strip	Yes		
2	Portable Dissolved Oxygen Meter / Field Fixing using chemicals	Yes		
3	Electrical Conductivity meter pen type	No		
4	Flow meter / Physical flow measuring	Yes		
5	GPS / Mobile with GPS app	Yes		
6	Ice Box (2 nos.) (150 litre & 100 litre capacities)	Yes		
7	Thermometer	Yes		
8	Stainless steel bucket with nylon rope and mug	No		
9	Ground water level measuring device	No		
10	Scoop / shovel	No		
11	Auger / core sampler	No		
<b>b) Optional Requirements</b>				
1	Bottom Sampler / Depth sampler	No		
2	Chloroscope for residual chlorine	No		
3	Vandorn or equivalent water sampler (Automatic sampler when composite sampling to be done)	No		

4	Ekman Dredge	No
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**B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring**

**a) Mandatory Requirements**

1	Fine dust samplers PM2.5 (*4 Nos)	Yes
2	Respirable Dust Sampler PM 10 (* 4 Nos)	Yes
3	High Volume Sampler ( SPM ) (4 Nos)	Yes
4	Handy Sampler with set of glass impingers (*2 Nos)	No
5	Low Volume Sampler (LVS)	No
6	Tedler bags different sizes	No
7	Meteorological tower (All in one telescopic Mast) with sensors comprising wind speed, wind direction, ambient temp., Relative humidity, Solar radiation, rainfall etc.	No
8	Nitrogen Cylinder portable	No
9	Activated Charcoal tubes/ Tenex	No
10	Barometer (Digital)	No
11	Isokinetic Stack Monitoring Kit complete with Stack monitoring instrument panel with inclined cum vertical manometer, Cold Box, Vacuum pump, Glass assembly impingers	Yes
12	Modified S type Stainless steel Pitot tube (Standard length) with Assembly	Yes
13	Monoblock type, rotary design vacuum pump	No
14	Orsat Apparatus	No

15	Source emission monitoring Impingers train set with spare impingers 100 ml & 225 ml capacity	Yes
16	Stainless steel heated Sampling Probes with thimble holders short and long	No
17	Flue Gas analyzer	No
18	Thermometer/ Thermocouple	No
19	Calibrator for Noise Meters	No
20	Digital Sound level ( Noise ) Metres	No
21	Portable TOC Analyzer for emission monitoring.	No
22	Polyurethane Foam PUF Sampler	No

**b) Optional Requirements**

1	Anemometer	No
2	Weather Monitoring system	No
3	Wind speed/wind direction monitor	No
4	Continuous Ambient Air Monitoring System, Fixed	No
5	Continuous PM10 Analyzer	No
6	Continuous Ambient Air Monitoring System, Mobile	No
7	Continuous PM2.5 analyzer	No
8	Ambient Nitrogen Oxides (NO-NO2- NOx Analyzer	No
9	Ambient Ozone Analyzer	No
10	Ambient BTEX Analyzer	No
11	Multipoint Gas Calibration system	No
12	Ambient Sulphur Dioxide analyzer	No
13	Ambient Carbon Monoxide & Carbon dioxide analyzer	No
14	Total Hydrocarbon analyzer	No

15	Ambient Ammonia analyzer	No
16	Zero Gas Generator	No
17	Synthetic Air Cylinder	No
18	Calibration Gas Cylinders, SO <sub>2</sub> , NO, CO, NH <sub>3</sub> , benzene and Toluene One each with stainless steel Regulators	No
19	Continuous emission monitoring equipment	No
20	19 inch Rack mounting system for air analyzers	No
21	Dry Gas Meter	No
22	Diesel Exhaust analyzer	No
23	Exhaust CO/HC analyzer with Sampling Probe	Yes
24	Automated Noise Monitoring System	No
25	Integrating Sound level meter	No
26	Continuous PM <sub>10</sub> & PM <sub>2.5</sub> Monitoring Analyzer TEOM system	No
27	Top loading orifice kit for calibration of HVS	No
28	Permeation tubes (SO <sub>2</sub> , NO-NO <sub>2</sub> -NO <sub>x</sub> , NH <sub>3</sub> , BTX)	No

**C. List of Equipment required for processing of Environmental Samples:**

**a) Mandatory Requirements**

1	Accelerated Solvent Extraction (ASE) System	No
2	Ammonia distillation assembly/TKN Analyzer	Yes
3	Analytical Balance 4/5 digit & 6 digit (Digital)	Yes

4	Aquarium for Toxicity bioassay test with complete accessories (*4 Nos)	No
5	Autoclave (*2 Nos)	No
6	Bacteriological Incubators Stainless steel (*2 Nos)	No
7	Bio safety cabinets	No
8	BOD Incubators (2 nos.)	Yes
9	Centrifuge	No
10	COD Digestion heated Blocks (2) with capacity 16 nos. or more	Yes
11	Cyanide Distillation Assembly (3)	No
12	Deep Freezer- Capacity 500 litre	No
13	Laboratory Ball Mill Grinder	No
14	Laboratory Grinder	No
15	Laminar Flow bench for Microbiological analysis	Yes
16	Magnetic Stirrer with heating system (*2 Nos)	No
17	Mechanical Shaker	No
18	Membrane Filtration assembly with vacuum pump (2 nos.)	No
19	Microbial culture refrigerator	No
20	Microwave Digester with 16 vessels/ Hot Plate	No
21	Muffle Furnace (*1 Nos), Range 1200 C	Yes
22	Phenol distillation assembly (3)	No
23	Plate counter, Manual/Automatic	No
24	Digestion Chambers/ Fume hood	Yes
25	Digital Thermometer & Humidity meter- All lab area	No
26	Dispensers (Various capacities ) up to 5, 10, 25 & 50 ml	No

27	Filtration Assembly with vacuum pump	Yes
28	Fluoride Distillation Assembly (3)	No
29	Arsenic / Fluoride Glass Distillation assemblies	No
30	Glass Double Distillation Assembly /Water Purification System	No
31	Heating mantles (2 nos.)	No
32	Hot plates (small, Medium and Large ) (*2 nos.)	No
33	Thermo Hygrometer	No
34	Imhoff Cone	No
35	Top loading Precision Digital Balance (minimum detection 0.001mg/0.01 mg) with anti-vibration facility- 3 nos. i.e 4/5 Digit (2 nos), - 6 Digit (1 no)	No
36	Refrigerators Big Size 300 litres or more, double door- 2 nos.	No
37	Rotary Evaporator (Buchi type) with water recirculating chiller	No
38	Separating funnel shaker	No
39	Soxhlet Apparatus	No
40	Solid Phase Extraction (SPE) /SPME Extraction system	No
41	Thermometer (Alcohol)	No
42	Dry & wet bulb Thermometer	No
43	Toxicity characteristic leaching procedure (TCLP) Extractors (Zero head and Bottle)	No
44	Ultra sonic water bath- Capacity 3 litre	No

45	Water Bath with temperature control (*2 Nos)	Yes
46	Water Bath with temp. for mercury sample digestion- 20 BOD Bottles	No

#### D. Analytical Instruments at Environmental Laboratories

##### a) Mandatory Requirements

1	Atomic Absorption spectrometer (AAS)- Flame, Hydride & Graphite Tube Atomizer (GTA)	No
2	Binocular Stereo Zoom Microscope	No
3	Bomb Calorimeter	No
4	BTX Analyzer with BTX calibrator	No
5	Colony counter	No
6	Conductivity meter- 2 nos.	Yes
7	Environment conditioning chamber	No
8	Digital Burettes- 50 ml*2, 100 ml*2	No
9	Dissolved Oxygen Meter (Bench model)	No
10	Flame Photometer	Yes
11	Flash Point Apparatus	No
12	Gas Chromatograph Mass Spectrometer	No
13	High Performance Liquid Chromatograph (HPLC)	No
14	Inductively Coupled Plasma (ICP) Spectrometer-OES	No
15	Ion Chromatograph Anion & Cations	No
16	Methane and Non Methane (NMHC) Analyzer	No
17	Microscope – 100x	No
18	Microscope Binocular Research	No
19	CO (NDIR based) Analyzer	No

20	Nephelometer (Turbidity Meter)	Yes
21	pH-Meter with combined electrode (3 point)- 2 nos.	No
22	Specific ion Analyzer with ion selective electrodes	No
23	Spectrophotometer Visible (Portable)	Yes
24	TKN Analyzer semi-automatic with aluminum block digester	Yes
25	UV-Vis Spectrophotometer	Yes
26	Moisture Content Analyzer	No
<b>b) Optional Requirements</b>		
1	Automatic Titration Assembly	No
2	Carbon, Hydrogen, Nitrogen and Sulphur (CHNS) Elemental Analyzer	No
3	EDXRF Analyzer/WDXRF Analyzer	No
4	Fourier-transform infrared Spectrometer (FTIR)	No
5	Flocculator ( Jar testing apparatus)	No
6	Toxic Gas Analyzer	No
7	Organic Halogen (AOX/TOX) Analyzer	No
8	TOC Analyzer	No
9	High Resolution Mass Spectrometer (HRGC-HRMS)	No
10	Inductively Coupled Plasma Mass (ICP-MS) Spectrometer	No
11	X Ray Fluorescence (XRF) Spectrometer (Portable)	No

## PART I: Facility available for monitoring of environmental parameters:

Parameters	Total Number of Parameters	Facility available for	Facility not available for	
<b>A. Sample Matrix / Group of Water and Wastewater</b>	<b>67</b>	<b>3</b>	<b>64</b>	<b>0</b>
(a) Physical Tests	8	3	5	0
(b) Inorganic Tests	<b>34</b>	<b>0</b>	<b>34</b>	<b>0</b>
(i) General & Non-metallic	15	0	15	0
(ii) Trace Metals Tests	19	0	19	0
(c) Organics (General) and Trace Organics Tests	<b>20</b>	<b>0</b>	<b>20</b>	<b>0</b>
Pesticides	15	0	15	0
Organochlorine Pesticides (OCPs) Tests	9	0	9	0
Organophosphorus Pesticides (OPPs) Tests	6	0	6	0
(d) Microbiological Tests	<b>4</b>	<b>0</b>	<b>4</b>	<b>0</b>
(e) Toxicological Tests	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>	<b>15</b>	<b>0</b>	<b>15</b>	<b>0</b>
(a) Soil / Sediment / Compost Tests	7	0	7	0
(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests	8	0	8	0
<b>C. Sample Matrix / Group of Analytes: Air</b>	<b>28</b>	<b>13</b>	<b>15</b>	<b>0</b>
(a) Ambient Air	12	7	5	0
(b) Stack Gas / Stationary Source Emission	9	4	5	0
(c) Noise Level	2	2	0	0
(d) Meteorological Monitoring	5	0	5	0

## PART II: Details of Laboratory Infrastructure (Instruments and Equipment)

Name of Instrument / Equipments	Total Numbers	Number of Available	Number of Not Available	
<b>Total</b>	<b>148</b>	<b>28</b>	<b>120</b>	<b>0</b>
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>	<b>15</b>	<b>6</b>	<b>9</b>	<b>0</b>
a ) Mandatory Requirements	11	6	5	0
b) Optional Requirements	4	0	4	0
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>	<b>50</b>	<b>7</b>	<b>43</b>	<b>0</b>
a) Mandatory Requirements	22	6	16	0
b) Optional Requirements	28	1	27	0
<b>C. List of Equipment required for processing of Environmental Samples:</b>	<b>46</b>	<b>9</b>	<b>37</b>	<b>0</b>
a) Mandatory Requirements	46	9	37	0
<b>D. Analytical Instruments at Environmental Laboratories</b>	<b>37</b>	<b>6</b>	<b>31</b>	<b>0</b>
a) Mandatory Requirements	26	6	20	0
b) Optional Requirements	11	0	11	0

**Note: It is requested to please ensure that each sheet is created separately for each laboratory and rename the sheet accordingly .  
For e.g. Central Laboratory, Regional Laboratory etc**

**LABORATORY ANALYTICAL FACILITIES**

**Name of the Board / Committee: Regional Laboratory Satna, Madhya Pradesh Pollution Control Board M.P (RO Satna)**

**PART I: Facility available for monitoring of environmental parameters:**

S. No.	Parameters	Facilities Available (Yes / No)	If facility is not available, Specify Timeline for addition of this parameter. (in months)	Action Taken for addition of this parameter (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. Sample Matrix / Group of Water and Wastewater</b>				
<b>(a) Physical Tests</b>				
1	Temperature	Yes		
2	Colour	Yes		
3	pH	Yes		
4	Turbidity	Yes		
5	Conductivity	Yes		
6	Total Solids	Yes		
7	Total Dissolved Solids (TDS)	Yes		
8	Total Suspended Solids (TSS)	Yes		
<b>(b) Inorganic Tests</b>				
<b>(i) General &amp; Non-metallic</b>				
1	Alkalinity	Yes		
2	Chloride	Yes		
3	Cyanide	No		
4	Dissolved oxygen	Yes		
5	Nitrite nitrogen	Yes		
6	Nitrate nitrogen	Yes		

7	Ammonical nitrogen	Yes
8	Fluoride	Yes
9	Hardness (Total)	Yes
10	Calcium	Yes
11	Magnesium	Yes
12	Phosphate	Yes
13	Sulphate	Yes
14	Sulphide	No
15	Total Residual chlorine (TRC)	No

**(ii) Trace Metals Tests**

1	Aluminium (Al)	No
2	Arsenic (As) Total	No
3	Barium	No
4	Boron	No
5	Chromium (Cr) Hexavalent	No
6	Chromium (Cr) Total	No
7	Cadmium (Cd)	No
8	Cobalt (Co)	No
9	Copper (Cu)	No
10	Iron (Fe)	No
11	Lead (Pb)	No
12	Manganese (Mn)	No
13	Mercury (Hg)	No
14	Nickel (Ni)	No
15	Potassium (K)	Yes
16	Sodium (Na)	Yes
17	Vanadium (V)	No
18	Zinc (Zn)	No
19	Selenium (Se)	No

**(c) Organics (General) and Trace Organics Tests**

1	Biological Oxygen Demand (BOD)	Yes
2	Chemical oxygen demand (COD)	Yes
3	Oil & Grease	Yes

Samples are  
sent to Central  
Laboratory  
Bhopal

4	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	No
5	Benzopyrene	No
<b>6</b>	<b>Pesticides</b>	
<b>6.a</b>	<b>Organochlorine Pesticides (OCPs) Tests</b>	
	i Aldrin	No
	ii Alpha Endosulphan	No
	iii p,p'-DDT	No
	iv Alpha-HCH	No
	v Beta HCH	No
	vi Beta Endosulphan	No
	vii Gama-HCH	No
	viii o,p'-DDT	No
	ix p,p'-DDE	No
<b>6.b</b>	<b>Organophosphorus Pesticides (OPPs) Tests</b>	
	i Malathion	No
	ii Methyl parathion	No
	iii Chlorpyriphos	No
	iv Dimethoate	No
	v Dieldrin	No
	vi Ethion	No
<b>(d)</b>	<b>Microbiological Tests</b>	
1	Total Coliform	Yes
2	Faecal Coliform	Yes
3	E. Coli	Yes
4	Faecal Streptococci	Yes
<b>(e)</b>	<b>Toxicological Tests</b>	
1	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	No
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>		
<b>(a) Soil / Sediment / Compost Tests</b>		
1	Cation Exchange Capacity (CEC)	No
2	Electrical Conductivity (EC)	No
3	Organic carbon (Chemical Method )	No
4	pH	No
5	Soil moisture	No

Samples are  
sent to Central  
Laboratory  
Bhopal

6	Total nitrogen	No
7	Metals by digestion (As, Cd, Cr, Pb, Ni etc.)	No

**(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests**

1	Corrosivity	No
2	Ignitability (Flash Point)	No
3	Loss on Drying at 1050C (% Moisture Content)	No
4	Loss on Drying at 5500C (% Organic Content)	No
5	pH	No
6	Organic carbon/matter (Chemical Method )	No
7	Calorific Value	No
8	Toxicity Characteristics leaching procedure (TCLP) Leachate and Metals in Leachate (As,Cd,Cr, Pb, Ni)	No

**C. Sample Matrix / Group of Analytes: Air**

**(a) Ambient Air**

1	Nitrogen dioxide as NO2	Yes
2	Sulphur dioxide (SO2)	Yes
3	Particulate matter (PM10)	Yes
4	Particulate matter (PM2.5)	Yes
5	Carbon Monoxide	Yes
6	Ozone	Yes
7	Benzene	Yes
8	Ammonia	Yes
9	Metals in Particulate Matter, Pb	No
10	Metals in Particulate Matter, As	No
11	Metals in Particulate Matter, Ni	No
12	Particulate Benzo-a-Pyrene (BaP)	No

**(b) Stack Gas / Stationary Source Emission**

1	Particulate Matter	Yes
2	Sulphur Dioxide	Yes
3	Carbon Dioxide	No

4	Carbon Monoxide (NDIR based Method)	No
5	Temperature	Yes
6	Moisture	Yes
7	Oxygen	No
8	Oxides of Nitrogen	No
9	Halides (HCL/HF)	No
<b>(c) Noise Level</b>		
1	Ambient Noise level measurement (20 to 140 dB)	Yes
2	Source Noise Level Measurement (Industrial process, DG set- 20 to 140dB)	Yes
<b>(d) Meteorological Monitoring</b>		
1	Ambient Temperature	Yes
2	Wind direction	Yes
3	Wind speed	Yes
4	Relative Humidity	Yes
5	Mixing Height	No

Specific remarks, if any:

**PART II: Details of Laboratory Infrastructure (Instruments and Equipment)**

S. No.	Name of Instrument / Equipments	Available Yes / No	If the Instrument / Equipment is not available, Action Taken for procurement of this Instrument / Equipment (Specification finalized / procurement initiated / work awarded / outsourced )	
			Specify Timeline for procurement of this instrument (in months)	
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>				
<b>a ) Mandatory Requirements</b>				

1	Portable / Pen type pH meter / pH strip	Yes
2	Portable Dissolved Oxygen Meter / Field Fixing using chemicals	Yes
3	Electrical Conductivity meter pen type	No
4	Flow meter / Physical flow measuring	No
5	GPS / Mobile with GPS app	Yes
6	Ice Box (2 nos.) (150 litre & 100 litre capacities)	Yes
7	Thermometer	Yes
8	Stainless steel bucket with nylon rope and mug	Yes
9	Ground water level measuring device	No
10	Scoop / shovel	No
11	Auger / core sampler	No

**b) Optional Requirements**

1	Bottom Sampler / Depth sampler	No
2	Chloroscope for residual chlorine	No
3	Vandorn or equivalent water sampler (Automatic sampler when composite sampling to be done)	No
4	Ekman Dredge	No

**B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring**

**a) Mandatory Requirements**

1	Fine dust samplers PM2.5 (*4 Nos)	Yes
2	Respirable Dust Sampler PM 10 (*4 Nos)	Yes
3	High Volume Sampler ( SPM ) (4 Nos)	No
4	Handy Sampler with set of glass impingers (*2 Nos)	No
5	Low Volume Sampler (LVS)	No
6	Tedler bags different sizes	No

7	Meteorological tower (All in one telescopic Mast) with sensors comprising wind speed, wind direction, ambient temp., Relative humidity, Solar radiation, rainfall etc.	No
8	Nitrogen Cylinder portable	No
9	Activated Charcoal tubes/ Tenex	No
10	Barometer (Digital)	No
11	Isokinetic Stack Monitoring Kit complete with Stack monitoring instrument panel with inclined cum vertical manometer, Cold Box, Vacuum pump, Glass assembly impingers	Yes
12	Modified S type Stainless steel Pitot tube (Standard length) with Assembly	No
13	Monoblock type, rotary design vacuum pump	No
14	Orsat Apparatus	No
15	Source emission monitoring Impingers train set with spare impingers 100 ml & 225 ml capacity	Yes
16	Stainless steel heated Sampling Probes with thimble holders short and long	Yes
17	Flue Gas analyzer	Yes
18	Thermometer/ Thermocouple	Yes
19	Calibrator for Noise Meters	Yes
20	Digital Sound level ( Noise ) Metres	Yes
21	Portable TOC Analyzer for emission monitoring.	No
22	Polyurethane Foam PUF Sampler	No

**b) Optional Requirements**

1	Anemometer	No
2	Weather Monitoring system	Yes
3	Wind speed/wind direction monitor	No
4	Continuous Ambient Air Monitoring System, Fixed	No
5	Continuous PM10 Analyzer	No
6	Continuous Ambient Air Monitoring System, Mobile	No
7	Continuous PM2.5 analyzer	No
8	Ambient Nitrogen Oxides (NO-NO2- NOx Analyzer	No
9	Ambient Ozone Analyzer	No
10	Ambient BTEX Analyzer	No
11	Multipoint Gas Calibration system	No
12	Ambient Sulphur Dioxide analyzer	No
13	Ambient Carbon Monoxide & Carbon dioxide analyzer	No
14	Total Hydrocarbon analyzer	No
15	Ambient Ammonia analyzer	No
16	Zero Gas Generator	No
17	Synthetic Air Cylinder	No
18	Calibration Gas Cylinders, SO2, NO, CO, NH3, Benzene and Toluene One each with stainless steel Regulators	No
19	Continuous emission monitoring equipment	No
20	19 inch Rack mounting system for air analyzers	No
21	Dry Gas Meter	No
22	Diesel Exhaust analyzer	No
23	Exhaust CO/HC analyzer with Sampling Probe	No
24	Automated Noise Monitoring System	Yes

25	Integrating Sound level meter	No
26	Continuous PM10& PM2.5 Monitoring Analyzer TEOM system	No
27	Top loading orifice kit for calibration of HVS	No
28	Permeation tubes (SO2, NO-NO2- NOx,NH3, BTX)	No

**C. List of Equipment required for processing of Environmental Samples:**

**a) Mandatory Requirements**

1	Accelerated Solvent Extraction (ASE) System	No
2	Ammonia distillation assembly/TKN Analyzer	Yes
3	Analytical Balance 4/5 digit & 6 digit (Digital)	Yes
4	Aquarium for Toxicity bioassay test with complete accessories (*4 Nos)	Yes
5	Autoclave (*2 Nos)	Yes
6	Bacteriological Incubators Stainless steel (*2 Nos)	Yes
7	Bio safety cabinets	Yes
8	BOD Incubators (2 nos.)	Yes
9	Centrifuge	Yes
10	COD Digestion heated Blocks (2) with capacity 16 nos. or more	Yes
11	Cyanide Distillation Assembly (3)	Yes
12	Deep Freezer- Capacity 500 litre	No
13	Laboratory Ball Mill Grinder	No
14	Laboratory Grinder	Yes
15	Laminar Flow bench for Microbiological analysis	Yes
16	Magnetic Stirrer with heating system (*2 Nos)	Yes
17	Mechanical Shaker	Yes

18	Membrane Filtration assembly with vacuum pump (2 nos.)	Yes
19	Microbial culture refrigerator	Yes
20	Microwave Digester with 16 vessels/ Hot Plate	Yes
21	Muffle Furnace (*1 Nos), Range 1200 C	Yes
22	Phenol distillation assembly (3)	No
23	Plate counter, Manual/Automatic	No
24	Digestion Chambers/ Fume hood	No
25	Digital Thermometer & Humidity meter- All lab area	Yes
26	Dispensers (Various capacities ) up to 5, 10, 25 & 50 ml	Yes
27	Filtration Assembly with vacuum pump	No
28	Fluoride Distillation Assembly (3)	No
29	Arsenic / Fluoride Glass Distillation assemblies	Yes
30	Glass Double Distillation Assembly /Water Purification System	Yes
31	Heating mantles (2 nos.)	Yes
32	Hot plates (small, Medium and Large ) (*2 nos.)	Yes
33	Thermo Hygrometer	Yes
34	Imhoff Cone	No
35	Top loading Precision Digital Balance (minimum detection 0.001mg/0.01 mg) with anti-vibration facility- 3 nos. i.e 4/5 Digit (2 nos), - 6 Digit (1 no)	No
36	Refrigerators Big Size 300 litres or more, double door- 2 nos.	Yes

37	Rotary Evaporator (Buchi type) with water recirculating chiller	Yes
38	Separating funnel shaker	Yes
39	Soxhlet Apparatus	No
40	Solid Phase Extraction (SPE) /SPME Extraction system	No
41	Thermometer (Alcohol)	No
42	Dry & wet bulb Thermometer	Yes
43	Toxicity characteristic leaching procedure (TCLP) Extractors (Zero head and Bottle)	No
44	Ultra sonic water bath- Capacity 3 litre	No
45	Water Bath with temperature control (*2 Nos)	Yes
46	Water Bath with temp. for mercury sample digestion- 20 BOD Bottles	No

#### **D. Analytical Instruments at Environmental Laboratories**

##### **a) Mandatory Requirements**

1	Atomic Absorption spectrometer (AAS)- Flame, Hydride & Graphite Tube Atomizer (GTA)	No
2	Binocular Stereo Zoom Microscope	Yes
3	Bomb Calorimeter	No
4	BTX Analyzer with BTX calibrator	Yes
5	Colony counter	Yes
6	Conductivity meter- 2 nos.	No
7	Environment conditioning chamber	No
8	Digital Burettes- 50 ml*2, 100 ml*2	Yes
9	Dissolved Oxygen Meter (Bench model)	Yes
10	Flame Photometer	No
11	Flash Point Apparatus	No
12	Gas Chromatograph Mass Spectrometer	No

13	High Performance Liquid Chromatograph (HPLC)	No
14	Inductively Coupled Plasma (ICP) Spectrometer-OES	No
15	Ion Chromatograph Anion & Cations	No
16	Methane and Non Methane (NMHC) Analyzer	No
17	Microscope – 100x	No
18	Microscope Binocular Research	No
19	CO (NDIR based) Analyzer	Yes
20	Nephelometer (Turbidity Meter)	Yes
21	pH-Meter with combined electrode (3 point)- 2 nos.	Yes
22	Specific ion Analyzer with ion selective electrodes	No
23	Spectrophotometer Visible (Portable)	No
24	TKN Analyzer semi-automatic with aluminum block digester	Yes
25	UV-Vis Spectrophotometer	Yes
26	Moisture Content Analyzer	No

**b) Optional Requirements**

1	Automatic Titration Assembly	No
2	Carbon, Hydrogen, Nitrogen and Sulphur (CHNS) Elemental Analyzer	No
3	EDXRF Analyzer/WDXRF Analyzer	No
4	Fourier-transform infrared Spectrometer (FTIR)	No
5	Flocculator ( Jar testing apparatus)	No
6	Toxic Gas Analyzer	No
7	Organic Halogen (AOX/TOX) Analyzer	No
8	TOC Analyzer	No

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- |    |   |    |
|----|---|----|
| 9  | High Resolution Mass Spectrometer (HRGC-HRMS)         | No |
| 10 | Inductively Coupled Plasma Mass (ICP-MS) Spectrometer | No |
| 11 | X Ray Fluorescence (XRF) Spectrometer (Portable)      | No |

**Specific remarks, if any:**

## PART I: Facility available for monitoring of environmental parameters:

Parameters	Total Number of Parameters	Facility available for	Facility not available for	
<b>A. Sample Matrix / Group of Water and Wastewater</b>	<b>67</b>	<b>29</b>	<b>38</b>	<b>0</b>
(a) Physical Tests	8	8	0	0
(b) Inorganic Tests	<b>34</b>	<b>14</b>	<b>20</b>	
(i) General & Non-metallic	15	12	3	0
(ii) Trace Metals Tests	19	2	17	0
(c) Organics (General) and Trace Organics Tests	<b>20</b>	<b>3</b>	<b>17</b>	<b>0</b>
Pesticides	15	0	15	0
Organochlorine Pesticides (OCPs) Tests	9	0	9	0
Organophosphorus Pesticides (OPPs) Tests	6	0	6	0
(d) Microbiological Tests	<b>4</b>	<b>4</b>	<b>0</b>	<b>0</b>
(e) Toxicological Tests	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>	<b>15</b>	<b>0</b>	<b>15</b>	
(a) Soil / Sediment / Compost Tests	7	0	7	0
(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests	8	0	8	0
<b>C. Sample Matrix / Group of Analytes: Air</b>	<b>28</b>	<b>18</b>	<b>10</b>	
(a) Ambient Air	12	8	4	0
(b) Stack Gas / Stationary Source Emission	9	4	5	0
(c) Noise Level	2	2	0	0
(d) Meteorological Monitoring	5	4	1	0

## PART II: Details of Laboratory Infrastructure (Instruments and Equipment)

Name of Instrument / Equipments	Total Numbers	Number of Available	Number of Not Available	
<b>Total</b>	<b>148</b>	<b>57</b>	<b>91</b>	<b>0</b>
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>	<b>15</b>	<b>6</b>	<b>9</b>	
a) Mandatory Requirements	11	6	5	0
b) Optional Requirements	4	0	4	0
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>	<b>50</b>	<b>11</b>	<b>39</b>	
a) Mandatory Requirements	22	9	13	0
b) Optional Requirements	28	2	26	0
<b>C. List of Equipment required for processing of Environmental Samples:</b>	<b>46</b>	<b>30</b>	<b>16</b>	
a) Mandatory Requirements	46	30	16	0
<b>D. Analytical Instruments at Environmental Laboratories</b>	<b>37</b>	<b>10</b>	<b>27</b>	
a) Mandatory Requirements	26	10	16	0
b) Optional Requirements	11	0	11	0

## PART III: DETAILS OF LABORATORIES ESTABLISHED UNDER THE WATER (P &amp; CP) ACT, 1974

No. of Laboratories established / recognised -1	Laboratory established by the Board, No. of remaining No. of Laboratories (out of those given in column No. (1)) Planned for Notification (out of those -2			Time line required for notification of Laboratories given in column No. -4	Laboratories / Institutes specified by State Govt., as State Water Laboratory as per Section 52 (1) of Water Act (other than No. of remaining Time line required for				NABL Accreditation No. of State Water			EPA Recognition No. of State Water				
	No. of Laboratories established / recognised -1	No. of Laboratories (out of those given in column No. (1)) Planned for Notification (out of those -2	No. of remaining -3		Govt. -5	Pvt. -6	Govt. -7	Pvt. -8	Govt. -9	Pvt. -10	Govt. -11	Pvt. -12	No. of Board's Laboratories 17 (2)		No. of Board's Laboratories 17 (2)	
													Govt. -14	Pvt. -15	Govt. -16	Pvt. -17
	11	11										6			1	

Note: The list of the laboratory may be attached separately (Board, State Govt. and Private)

Specific remarks, if any:

## PART IV: DETAILS OF LABORATORIES ESTABLISHED UNDER THE AIR (P &amp; CP) ACT, 1981

No. of Laboratories established / recognised -1	Laboratory established by the Board, No. of remaining No. of Laboratories (out of those given in column No. (1)) Planned for Notification (out of those -2			Time line required for notification of Laboratories given in column No. -4	Laboratories / Institutes specified by State Govt., as State Air Laboratory as per Section 28 (1) of Air Act (other than those No. of remaining Time line required for				NABL Accreditation No. of State Water			EPA Recognition No. of State Water				
	No. of Laboratories established / recognised -1	No. of Laboratories (out of those given in column No. (1)) Planned for Notification (out of those -2	No. of remaining -3		Govt. -5	Pvt. -6	Govt. -7	Pvt. -8	Govt. -9	Pvt. -10	Govt. -11	Pvt. -12	No. of Board's Laboratories 17 (2)		No. of Board's Laboratories 17 (2)	
													Govt. -14	Pvt. -15	Govt. -16	Pvt. -17
	11	11										6			1	

Note: The list of the laboratory may be attached separately (Board, State Govt. and Private)

Specific remarks, if any:

## PART V: DETAILS OF LABORATORIES PARTICIPATED ON ANALYTICAL QUALITY CONTROL AND QUALITY ASSURANCE CONDUCTED BY CPCB IN RESPECT OF WATER QUALITY PARAMETERS

S. No.	Name of the Laboratory with address	No. of Parameters in AQC Exercise				Number of Parameters Attempted				% Parameters Successful			
		33rd Exercise	34th Exercise	35th Exercise	36th Exercise	33rd Exercise	34th Exercise	35th Exercise	36th Exercise	33rd Exercise	34th Exercise	35th Exercise	36th Exercise
1	Central Laboratory	9	11	11	18	9	11	6	18	77.78	86.36	54.54	83.33
2	Regional Lab Ujjain	9	11			8	11			88.88	9.91		
3	Regional Lab Indore		11		18		11		18		77.27		77.22
4													
5													
6													

Note: 33rd Exercise (Metals) held in 2020-2021,  
34th Exercise (General and Physico-Chemical parameters) held in 2021-2022  
35th Exercise (Pesticides) held in 2023  
36th Exercise (General and Physico-Chemical parameters) held in 2023-2024

Provide details of each Laboratories (Central, Regional/Zonal, District) in separate Row

Specific remarks, if any:

**PART VI: DETAILS OF LABORATORIES PARTICIPATED ON PROFICIENCY TESTING (PT)**

S. No.	Name of Laboratory with address	Year of PT participation	PT Sample Provider (Name and Address)	Number of Parameters in Accreditation Scope	Number of Parameters for which Laboratory participated in PT exercise	Number of Parameter with Satisfactory Results
1	Central Laboratory	2022	GEIL, Mohali	108	20	20
		2023	GEIL, Mohali	108	26	25
		2024	GEIL, Mohali	108	22	22
2	Regional Lab Indore	2022	GEIL, Mohali	121	11	11
		2023	GEIL, Mohali	121	9	9
		2024	GEIL, Mohali	121	14	14
3	Regional Lab Ujjain	2022	GEIL, Mohali	59		
		2023	GEIL, Mohali	59		
4	Regional Lab Sagar	2024	GEIL, Mohali	59	20	18
		2022	APTA		10	9
	Regional Lab, Satna	2023				
		2024	GEIL, Mohali	43	10	3
		2022	GEIL, Mohali		3	
	Regional Lab, Jabalp	2023	GEIL, Mohali		12	12
		2024	GEIL, Mohali	65	4	2 Result Awaited for 2 parameters
		2022	GEIL, Mohali			
		2023	GEIL, Mohali		19	14
		2024	GEIL, Mohali	67	18	16

Note: Provide details of each Laboratory (Central, Regional/Zonal, District) in separate Row