

Laboratory **Perfact Researchers Pvt. Ltd., 506-507, 5th Floor, NN Mall, Mangalam Place, Sec-3, Rohini, New Delhi**

Accreditation Standard **ISO/IEC 17025: 2005**

Certificate Number **TC-6993**

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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CHEMICAL TESTING

I.	ATMOSPHERIC POLLUTION			
1.	Ambient Air	Oxides of Nitrogen	IS:5182 (Part 6)	5 µg/m ³ to 250 µg/m ³
		Sulphur dioxide as SO ₂	IS:5182 (Part 2)	3 µg/m ³ to 250 µg/m ³
		Suspended particulate matter (SPM)	IS:5182 (Part 4)	3 µg/m ³ to 1000 µg/m ³
		Particulate Matter Size less than 10 µm (PM ₁₀)	IS:5182 (Part 23)	5 µg/m ³ to 1000 µg/m ³
		Particulate Matter Size less than 2.5 µm (PM _{2.5})	Lab SOP No. 005, Dated 30.06.2015	10 µg/m ³ to 500 µg/m ³
		Ammonia (NH ₃)	Method 401, Methods of Air Sampling and Analysis (3 rd Edition) by James P Lodge	20 µg/m ³ to 700 µg/m ³
		Carbon monoxide (CO)	IS:5182 (Part 10)	0.1 µg/m ³ to 20 mg/m ³
		Ozone (O ₃)	Method 413, Methods of Air Sampling and Analysis (3 rd Edition) by James P Lodge	10 µg/m ³ to 500 µg/m ³
		Chlorine	IS:5182 (Part 19)	10 µg/m ³ to 100 µg/m ³
		Lead	IS:5182 (Part 22)	0.1 µg/m ³ to 10 µg/m ³
		Benzene	IS:5182 (Part 11)	1 µg/m ³ to 200 µg/m ³
		Toluene	IS:5182 (Part 11)	1 µg/m ³ to 200 µg/m ³
		Xylene	IS:5182 (Part 11)	1 µg/m ³ to 200 µg/m ³
		Ethyl Benzene	USEPA 0040 / ASTM D6889: 2008	1 µg/m ³ to 20µg/m ³

Vinay Kumar Tyagi
Convenor

N. Venkateswaran
Program Director

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		Nickel	Lab SOP No. 008, Dated 30.06.2015	10 µg/m ³ to 300 µg/m ³
		Fluoride	Method 205, Methods of Air Sampling and Analysis (3 rd Edition) by James P Lodge	0.2 µg/m ³ to 20 µg/m ³
		Non Methane Hydrocarbon	USEPA 0040 / ASTM D6889 03	0.1 µg/m ³ to 100 µg/m ³
		Methane	USEPA 0040 / ASTM D6889 03	0.1 µg/m ³ to 100 µg/m ³
2.	Polycyclic Aromatic Hydrocarbons	Acenaphthene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L
		Acenaphthylene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L
		Anthracene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L
		Benzo[a]anthracene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L
		Benzo[b]fluoranthene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L
		Benzo[k]fluoranthene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L
		Chrysene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L
		Dibenzo[a,h]anthracene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L
		Fluoranthene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L
		Fluorene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L
		Naphthalene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L
	Phenanthrene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L	

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		Pyrene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L
		Benzo(a)Pyrene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L
		Indeno(123-cd)Pyrene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L
		Benzo(ghi)perylene	USEPA 8272 Gas Chromatography	0.0005 mg/L to 10 mg/L
3.	Volatile Organic Compounds (VOCs)	Bromobenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		Bromochloromethane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		Bromodichloromethane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		Bromoform	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		Butylbenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		sec-Butylbenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		tert-Butylbenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		Carbon tetrachloride	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		Chlorobenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		Chloroform	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		2-Chlorotoluene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		4-Chlorotoluene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		Dibromochloromethane	USEPA 0040 / ASTM	0.01 µg/m ³ to 100 µg/m ³

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			D6889_03	
		1,2-Dibromo-3-chloropropane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,2-Dibromoethane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		Dibromomethane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,2-Dichlorobenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,3-Dichlorobenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,4-Dichlorobenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,1-Dichloroethane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,2-Dichloroethane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,1-Dichloroethylene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		<i>cis</i> -1,2-Dichloroethylene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		<i>trans</i> -1,2-Dichloroethylene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		Dichloromethane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,2-Dichloropropane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,3-Dichloropropane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		2,2-Dichloropropane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,1-Dichloro-1-propene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		<i>cis</i> -1,3-Dichloropropene	USEPA 0040 / ASTM	0.01 µg/m ³ to 100 µg/m ³

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			D6889_03	
		<i>trans</i> -1,3-Dichloropropene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		Hexachloro-1,3-butadiene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		Isopropylbenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		p-Isopropyltoluene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		Propylbenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,1,1,2-Tetrachloroethane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,1,2,2-Tetrachloroethane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		Tetrachloroethylene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,2,3-Trichlorobenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,2,4-Trichlorobenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,1,1-Trichloroethane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,1,2-Trichloroethane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		Trichloroethylene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,2,3-Trichlorobenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,2,4-Trichlorobenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,1,1-Trichloroethane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,1,2-Trichloroethane	USEPA 0040 / ASTM	0.01 µg/m ³ to 100 µg/m ³

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			D6889_03	
		Trichloroethylene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,2,3-Trichloropropane	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,2,4-Trimethylbenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
		1,3,5-Trimethylbenzene	USEPA 0040 / ASTM D6889_03	0.01 µg/m ³ to 100 µg/m ³
4.	Stack Emission	Particulate matter	IS:11255 (Part-1)	10 mg/Nm ³ to 5000 mg/Nm ³
		Velocity	IS:11255 (Part-3)	1 m/s to 30 m/s
		Volume of Flue Gas Discharge (Flow rate)	IS:11255 (Part-3)	10 Nm ³ /h to 75000 Nm ³ /h
		Oxides of Nitrogen	IS:11255 (Part-7)	2 mg/Nm ³ to 750 mg/Nm ³
		Sulphur dioxide	IS:11255 (Part-2)	1 mg/Nm ³ to 1000 mg/Nm ³
		Carbon dioxide	IS:13270	0.2% to 20%
		Carbon monoxide	IS: 13270	0.01% to 10%
		Temperature	IS:11255 (Part-3)	Ambient-600°C
		Oxygen	IS:13270	0.2% to 20%
		Ammonia(NH ₃)	IS:11255 (Part-6)	0.3 mg/Nm ³ to 100 mg/Nm ³
		Carbon Disulphide (CS ₂)	IS:11255 (Part-4)	1 mg/Nm ³ to 500 mg/Nm ³
		Total Fluoride	USEPA Method 13A	0.02 mg/Nm ³ to 2.0 mg/Nm ³
		Acid mist	USEPA Method-8	1 mg/Nm ³ to 1000 mg/Nm ³

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		Hydrogen Sulfide	IS:11255 Part-IV	1 mg/Nm ³ to 500 mg/Nm ³
5.	Meteorological Parameters	Ambient temperature	SOP No. – PRPL/OP/073 based on Instructions to observers at the surface observatories Part I - 1987 of IMD & CPCB Guideline	1 °C to 60°C
		Wind Direction	SOP No. PRPL/OP/074 based on Instructions to observers at the surface observatories Part I - 1987 of IMD & CPCB Guideline	0 to 360° (16 directions)
		Wind speed	SOP No. PRPL/OP/075 based on Instructions to observers at the surface observatories Part I - 1987 of IMD & CPCB Guideline	0.1 to 140 Km/hr.
		Relative humidity	SOP No. PRPL/OP/076 based on Instructions to observers at the surface observatories Part I - 1987 of IMD & CPCB Guideline	1% to 99%
II.	WATER			
1.	Drinking Water/ Surface Water and Ground Water	Conductivity (Specific Conductance at 25°C)	APHA 2510 B (Electrometric)	120000µmhos/cm to 20000µmhos/cm
		Colour	APHA 2120 B (Colorimetric (Platinum Cobalt))	1 Hazen to 50 Hazen
		pH at 25°C	APHA 4500-H ⁺ B Electrometric	2 to 12
		Fixed Solid	APHA 2540 E Gravimetric Method	1mg/L to 500mg/L

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		Total Solids	APHA 2540 B Gravimetric Method	1mg/L to 20000mg/L
		Total Dissolve Solids	APHA 2540 C Gravimetric Method	1mg/L to 20000mg/L
		Total Suspended Solids	APHA 2540 D Gravimetric Method	1 mg/L to 10000 mg/L
		Turbidity	APHA 2130 B Nephelometric Method	1 NTU to 400 NTU
		Temperature	APHA 2150 B Thermometric Method	1°C to 60 °C
		Odour	APHA 2550 B Organoleptic	Qualitative
		Acidity (as CaCO ₃)	APHA 2310 B Titrimetric Method	2 mg/l to 4000 mg/L
		Alkalinity (CaCO ₃)	APHA 2320 B Titrimetric Method (Indicator Method)	2 mg/L to 4000mg/l
		Ammonical Nitrogen (NH ₃)	APHA 4500 – NH ₃ C Titrimetric Method	1 mg/L to 500mg/l
		Chloride	APHA 4500 – Cl, B Argentometric	2 mg/L to 10000mg/L
		Chlorine Residual	APHA 4500 – Cl, B Titrimetric Method	1 mg/L to 100mg/L
		Dissolved Oxygen	APHA 4500 – O, C Iodometric	0.2 mg/L to 10mg/L
		Fluoride	APHA 4500 – F D Colorimetric	0.1 mg/L to 10mg/L
		Total Hardness (as CaCO ₃)	APHA 2340 C EDTA Titrimetric method	2 mg/L to 2000mg/L
		Total Kjeldahl Nitrogen	APHA 4500 – N _{Org} B Digestion Distillation Titration method (> 5 mg/l) Nesslerization method (< 5 mg/l)	1 mg/L to 1000mg/L

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		Nitrite Nitrogen (as NO _{2-N})	APHA 4500 NO ₂ B, Colorimetric	0.2 mg/L to 100 mg/L
		Nitrate Nitrogen	APHA 4500 NO ₃ B, UV Spectrophotometric	0.1 mg/L to 500 mg/L
		Phosphorous	APHA 4500-P D Colorimetric	0.01mg/L to 100mg/L
		Sulphates (as SO ₄)	APHA 4500-So ₄ E,	2mg/L to 2000mg/L
		Carbon Dioxide	APHA 4500 CO ₂ C,	2mg/L to 20mg/L
		Boron	APHA 4500-B, C Colorimetric	0.1mg/L to 10.0mg/L
		Calcium (Ca)	APHA 3500-Ca B Titrimetric	1mg/L to 1000mg/L
		Magnesium (Mg)	APHA 3500-Mg B By Calculation	By Calculation
		Potassium (K)	APHA 3111-K B	0.1mg/L to 100mg/L
		Sodium (Na)	APHA 3111-Na B	0.1mg/L to 5000mg/L
		Sodium Absorption Ratio (SAR)	IS11624	By Calculation
		Biochemical Oxygen Demand (BOD @ 20°C for 5 days)	APHA 5210 B Bio Assay method (Titrimetric method)	1 mg/L to 100 mg/L
		Biochemical Oxygen Demand (BOD @ 27°C for 3 days)	IS 3025 (P-44) Bio Assay method (Titrimetric method)	1 mg/L to 100 mg/L
		Chemical Oxygen Demand	APHA 5220 B&C, Open & Closed reflux method	5 mg/L to 2000mg/L
		Bromide	APHA 4500 Br-B, Spectrophotometric	0.1mg/L to 10mg/L
		Sulphide	APHA 4500 -S ² B Titrimetric	0.1mg/L to 100mg/L
		Total Phenols	APHA 5530D Colorimetric Method	0.1mg/L to 10mg/L
2.	BTEX Compounds	Benzene	ASTM D6520_06	0.0001mg/L to 10mg/L

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			Gas Chromatography	
		Toluene	ASTM D6520_06 Gas Chromatography	0.0001 mg/L to 10 mg/L
		Ethyl Benzene	ASTM D6520_06 Gas Chromatography	0.0001 mg/L to 10 mg/L
		Xylene	ASTM D6520_06 Gas Chromatography	0.0001 mg/L to 10 mg/L
III.	RESIDUES IN WATER			
1.	Trace Elements	Calcium (Ca)	APHA 3500–Ca B Atomic Absorption Spectrophotometer	1 mg/L to 1000mg/L
		Chromium (Cr) total	APHA 3111 B Cr Atomic Absorption Spectrophotometer	0.1mg/L to 15mg/L
		Chromium (Cr) total Hexavalent	APHA 3500–Cr Colorimetric	0.02mg/L to 10mg/L
		Zinc	APHA 3111 B Atomic Absorption Spectrophotometer	0.01mg/L to 100mg/L
		Cadmium	APHA 3111 B Atomic Absorption Spectrophotometer	0.001mg/L to 10mg/L
		Nickel	APHA 3111 B Atomic Absorption Spectrophotometer	0.02mg/L to 10mg/L
		Copper	APHA 3111 B Atomic Absorption Spectrophotometer	0.02mg/L to 10mg/L
		Lead	APHA 3111 B Atomic Absorption Spectrophotometer	0.01mg/L to 10mg/L
		Iron	APHA 3111 B Atomic	0.1mg/L to 100mg/L

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			Absorption Spectrophotometer	
		Manganese	APHA 3111 B Atomic Absorption Spectrophotometer	0.1mg/L to 100mg/L
		Silver	APHA 3111 B Atomic Absorption Spectrophotometer	0.1mg/L to 10mg/L
		Gold	APHA 3111 B Atomic Absorption Spectrophotometer	0.1mg/L to 10mg/L
		Mercury (Hg)	APHA 3111-B Atomic Absorption Spectrophotometer	0.01mg/L to 1mg/L
		Bromide	APHA 4500 Br-Spectrophotometric	0.1mg/L to 10mg/L
		Sulphide	APHA 4500 –S ² B Titrimetric	0.1mg/L to 100mg/L
		Arsenic	APHA 3500 Spectrophotometric	1.0mg/L to 100mg/L
		Aluminum (Al)	APHA 3111 C-Al Atomic Absorption Spectrophotometer	0.02mg/L to 20mg/L
		Lithium	APHA 3500- Li (B)	0.1mg/L to 10 mg/L
2.	Polycyclic Aromatic Hydrocarbons (PAH)	Acenaphthene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
		Acenaphthylene	USEPA 8272 Gas Chromatography	0.5µg/L to 10000µg/L
		Anthracene	USEPA 8272 Gas Chromatography	0.5µg/L to 10000µg/L
		Benzo[a]anthracene	USEPA 8272 Gas Chromatography	0.5µg/L to 10000µg/L
		Benzo[b]fluoranthene	USEPA 8272 Gas Chromatography	0.5µg/L to 10000µg/L

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		Benzo[k]fluoranthene	USEPA 8272 Gas Chromatography	0.5µg/L to 10000µg/L
		Chrysene	USEPA 8272 Gas Chromatography	0.5µg/L to 10000µg/L
		Dibenzo[a,h]anthracene	USEPA 8272 Gas Chromatography	0.5µg/L to 10000µg/L
		Fluoranthene	USEPA 8272 Gas Chromatography	0.5µg/L to 10000µg/L
		Fluorene	USEPA 8272 Gas Chromatography	0.5µg/L to 10000µg/L
		Naphthalene	USEPA 8272 Gas Chromatography	0.5µg/L to 10000µg/L
		Phenanthrene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
		Pyrene	USEPA 8272 Gas Chromatography	0.5µg/L to 10000µg/L
		Benzo(a)Pyrene	USEPA 8272 Gas Chromatography	0.5µg/L to 10000µg/L
		Indeno(123-cd)Pyrene	USEPA 8272 Gas Chromatography	0.5µg/L to 10000µg/L
		Benzo(ghi)perylene	USEPA 8272 Gas Chromatography	0.5µg/L to 10000µg/L
3.	Tri Halo Methanes (THMs)	Bromodichloromethane	ASTM D6520_06 Gas Chromatography	0.1µg/L to 500µg/L
		Chloroform	ASTM D6520_06 Gas Chromatography	0.1µg/L to 500µg/L
		Dibromochloromethane	ASTM D6520_06 Gas Chromatography	0.1µg/L to 500µg/L
		Bromoform	ASTM D6520_06 Gas Chromatography	0.1µg/L to 500µg/L
IV.	POLLUTION & ENVIRONMENT			
1.	Waste Water	Conductivity (Specific	APHA 2510 B	1µmhos/cm to

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	(Effluents/ Sewage)	Conductance at 25°C)	Electrometric	200000µmhos/cm
		Colour	APHA 2120 B Colorimetric (Platinum Cobalt)	1 Hazen to 50Hazen
		pH at 25°C	APHA 4500 –H ⁺ B Electrometric	2 to 12
		Fixed Solid	APHA 2540 E Gravimetric method	1mg/L to 5000mg/L
		Volatile Solids	APHA 2540 E Gravimetric method	1mg/L to 10000mg/L
		Total Solids	APHA 2540 B Gravimetric method	1mg/L to 200000mg/L
		Total dissolved Solids	APHA 2540 C Gravimetric method	1mg/L to 200000mg/L
		Total Suspended Solids	APHA 2540 D Gravimetric method	1mg/L to 100000mg/L
		Turbidity	APHA 2130 B Nephelometric method	1 NTU to 400 NTU
		Temperature	APHA 2550 B Thermometric method	1°C to 60 °C
		Odour	APHA 2150 B Organoleptic	Qualitative Unobjectionable/ Objectionable
		Settable Solids	APHA 2540 F Gravimetric method	1ml/L to 400ml/L
		Sludge Volume Index	APHA 2710 D Gravimetric method	2ml/g to 100ml/g
		Acidity (as CaCO ₃)	APHA 2310 B Titrimetric method	2mg/L to 4000mg/L
		Alkalinity (CaCO ₃)	APHA 2320 B Titrimetric method (Indicator method)	2mg/L to 4000mg/L
		Ammonical Nitrogen (NH ₃ -N)	APHA 4500 – NH ₃ ,C	1mg/L to 500mg/L

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		3)	Titrimetric method	
		Chloride	APHA 4500 Cl, B Argentometric method	2mg/L to 10000mg/L
		Chlorine Residual	APHA 4500 Cl, B Titrimetric Method	0.1mg/L to 100mg/L
		Dissolved Oxygen	APHA 4500 O, C Iodometric method	0.1mg/L to 10mg/L
		Fluoride	APHA 4500-F D Colorimetric method	0.1mg/L to 10mg/L
		Total Hardness (as CaCO ₃)	APHA 2340 C EDTA Titrimetric method	2mg/L to 20000mg/L
		Total Kjeldahl Nitrogen	APHA 4500 N _{org} B Digestion Distillation Titration method (> 5 mg/l) Nesslerization method (< 5 mg/l)	1mg/L to 1000mg/L
		Nitrite Nitrogen	APHA 4500 NO ₂ B Colorimetric	0.1mg/L to 100mg/L
		Nitrate Nitrogen	APHA 4500 NO ₃ B UV Spectrophotometric	0.1mg/L to 500mg/L
		Phosphorous	APHA 4500-P D Colorimetric	0.01mg/L to 100mg/L
		Sulphates (as SO ₄)	APHA 4500 SO ₄ E Turbidimetric	2mg/L to 2000mg/L
		Bromide	4500 Br-B Spectrophotometric	0.1mg/L to 10mg/L
		Carbon Dioxide	APHA 4500 CO ₂ C By Calculation	2mg/L to 20mg/L
		Iodide	APHA 4500 I, B Colorimetric	0.01mg/L to 5.0mg/L
		Boron	APHA 4500-B, C Colorimetric	0.1mg/L to 10.0mg/L
		Calcium	APHA 3500 Ca B	1mg/L to 1000mg/L

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			EDTA Titrimetric method	
		Chromium (Cr) total	APHA 3111B-Cr Colorimetric	0.1 mg/L to 15mg/L
		Chromium (Cr) Hexavalent	APHA 3500-Cr B Atomic Absorption Spectrophotometer	0.02mg/L to 10mg/L
		Iron (Fe)	APHA 3111-Fe B Atomic Absorption Spectrophotometer	0.1mg/L to 50mg/L
		Magnesium (Mg)	APHA 3500-Mg B	By Calculation
		Potassium (K)	APHA 3111-K B Atomic Absorption Spectrophotometer	0.1mg/L to 1000mg/L
		Sodium (Na)	APHA 3111-Na B Atomic Absorption Spectrophotometer	0.1mg/L to 5000mg/L
		Sodium Absorption Ratio (SAR)	IS11624 By Calculation	By Calculation
		Aluminium (Al)	APHA 3500-Al B Colorimetric	0.2 mg/L to 20mg/L
		Lithium	APHA 3500-Li (B), Atomic Absorption Spectrophotometer	0.1mg/L to 10mg/L
		Biochemical Oxygen Demand (BOD @ 20°C for 5 days)	APHA 5210 B Bio Assay method (Titrimetric method)	2mg/L to 50000mg/L
		Biochemical Oxygen Demand (BOD @ 27°C for 3 days)	IS:3025 (P-44) Bio Assay method (Titrimetric method)	2mg/L to 50000mg/L
		Chemical Oxygen Demand	APHA 5220, B&C Open & Closed reflux method	5mg/L to 100000mg/L
		Oil and Grease	APHA 5520 B	0.1 mg/L to 2000mg/L

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			Liquid –liquid partition Gravimetric method	
		Zinc	APHA 3111 B Atomic Absorption Spectrophotometer	0.05mg/L to 1000mg/L
		Cadmium	APHA 3111 B Atomic Absorption Spectrophotometer	0.005mg/L to 10mg/L
		Nickel	APHA 3111 B Atomic Absorption Spectrophotometer	0.1mg/L to 1000mg/L
		Copper	APHA 3111 B Atomic Absorption Spectrophotometer	0.1mg/L to 1000mg/L
		Lead	APHA 3111 B Atomic Absorption Spectrophotometer	0.1mg/L to 1000mg/L
		Iron	APHA 3111 B Atomic Absorption Spectrophotometer	0.1mg/L to 1000mg/L
		Manganese	APHA 3111 B Atomic Absorption Spectrophotometer	0.1mg/L to 1000mg/L
		Silver	APHA 3111 B Atomic Absorption Spectrophotometer	0.1mg/L to 100mg/L
		Gold	APHA 3111 B Atomic Absorption Spectrophotometer	0.1mg/L to 100mg/L
		Sulphide	APHA 4500–S ² B Titrimetric method	0.1mg/L to 100mg/L
		Arsenic	APHA 3500 Spectrophotometric	1mg/L to 100mg/L

Vinay Kumar Tyagi
Convenor

N. Venkateswaran
Program Director

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		Total Phenols	APHA 5530D Colorimetric method	0.1mg/L to 10mg/L
2.	Poly Cyclic Aromatic Hydrocarbons (PAH)	Acenaphthene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
		Acenaphthylene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
		Anthracene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
		Benzo[a]anthracene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
		Benzo[b]fluoranthene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
		Benzo[k]fluoranthene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
		Chrysene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
		Dibenzo[a,h]anthracene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
		Fluoranthene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
		Fluorene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
		Naphthalene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
		Phenanthrene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
		Pyrene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
		Benzo(a)Pyrene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L
	Indeno(123-cd)Pyrene	USEPA 8272 Gas Chromatography	0.5 µg/L to 10000µg/L	
	Benzo(ghi)perylene	USEPA 8272	0.5 µg/L to 10000µg/L	

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			Gas Chromatography	
3.	BTEX	Benzene	ASTM D6520_06 Gas Chromatography	0.1µg/L to 100000µg/L
		Toluene	ASTM D6520_06 Gas Chromatography	0.1µg/L to 100000µg/L
		Ethyl Benzene	ASTM D6520_06 Gas Chromatography	0.1µg/L to 100000µg/L
		Xylene	ASTM D6520_06 Gas Chromatography	0.1µg/L to 100000µg/L
4.	Trihalomethanes (THMs)	Bromodichloromethane	ASTM D6520_06 Gas Chromatography	0.1µg/L to 500000µg/L
		Chloroform	ASTM D6520_06 Gas Chromatography	0.1µg/L to 500000µg/L
		Dibromochloromethane	ASTM D6520_06 Gas Chromatography	0.1µg/L to 500000µg/L
		Bromoform	ASTM D6520_06 Gas Chromatography	0.1µg/L to 500000µg/L
5.	Soils/ Sediments	Boron	Lab SOP No. 001 based on Soil Testing in India by Ministry of Agriculture, 2011, GOI	1mg/kg - 100mg/kg
		Cation Exchange capacity (CEC)	(ISO- 11260: 1994 (E) (Reissued in 1996)	5 meq/100g to 300meq/100g
		Electrical Conductivity (EC)	ISO 14767	1 µS/cm to 1000µS/cm
		Available Nitrogen	IS 14256	5 mg/kg to 500mg/kg
		Organic Matter	IS: 2720 (Part xxii)	0.01% to 10%
		pH	ISO-10390	1 to 12
		Phosphorus (available)	Lab SOP No. 002Dated 30.06.2015 based on USDA M 61, 1954, edition by LA Richards	5mg/kg to 500mg/kg
		Phosphate (Total)	IS 10158	5mg/kg to 1000mg/kg

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		Total Kjehldal Nitrogen	APHA 4500-Norg B	5mg/kg to 1000mg/kg
		Bicarbonate Alkalinity as (CaCO ₃)	Lab SOP no. 008 Dated 30.06.2015 (USDA M-12, 1954 Edition by LA Richards)	2mg/kg to 1000mg/kg
		Colour	Munsell chart	-
		Gypsum requirement	Lab SOP 009, Dated 30.06.2015 based on Soil Testing in India by Ministry of Agriculture, 2011, GOI	20mg/kg to 1200mg/kg
		Available Chloride (as Cl)	Lab SOP No. 010, Dated 30.06.2015 based on (USDA M 13) by 1954, edition by LA Richards	5mg/kg to 1000mg/kg
		Nitrate (as NO ₃)	ISO 14256	5mg/kg to 500mg/kg
		Sulphur (as S)+	Lab SOP No. 012, Dated: 30.06.2015 based on Soil Testing in India by Ministry of Agriculture, GOI	1mg/kg to 200mg/kg
		Total Soluble Sulphate (as SO ₄)	IS:2720 Part – 27	0.5mg/kg to 1000mg/kg
		Lead	ISO:11466	5mg/kg to 2000mg/kg
		Cadmium	ISO:11466	5mg/kg to 2000mg/kg
		Zinc	ISO:11466	5mg/kg to 2000mg/kg
		Aluminium	ISO:11466	5mg/kg to 2000mg/kg
		Manganese	ISO:11466	5mg/kg to 5000mg/kg
		Calcium Carbonate	IS 2720 Part 23	1% to 40%
		Potash Available	Lab SOP No. 019 Dated 30.06.2015 based on USEPA 3050B	1mg/kg to 500 mg/kg
		Total Soluble Solids	IS:2720 (Part 21)	1% to 60 %

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CHEMICAL TESTING

AT SITE				
I.	ATMOSPHERIC POLLUTION			
1.	Ambient Noise Levels (Excluding Vibrations)	Sound Pressure Level	IS:9989	30 dB(A) to 130 dB(A)
2.	Source Noise Levels	Sound Pressure Level	IS:4758	30 dB(A)to 130 dB(A)