

**E – TENDER DOCUMENT  
FOR  
SUPPLY, INSTALLATION, COMMISSIONING, AND  
PROVIDING OPERATION MAINTENANCE SERVICES  
OF CONTINUOUS WATER QUALITY MONITORING  
SYSTEMS (CWQMS) IN CHHATTISGARH**



**Tender No. 07/HO/CECB/SCI/CWQMS/E-Tender/2020-21**

**CHHATTISGARH ENVIRONMENT CONSERVATION  
BOARD (CECB)**

**‘Paryavas Bhawan, North Block, Sector - 19, Nava**

**Raipur, Atal Nagar (C.G.) 492002**

**Web Site: <http://www.enviscecb.org>**

**E-mail: [hocecb@gmail.com](mailto:hocecb@gmail.com)**

**Phone: 0771-2512220**

## **IMPORTANT NOTE & TENDER NOTICE:**

Chhattisgarh Environment Conservation Board Invites Bids for Selection Of Supply, Installation, Commissioning, and providing Operation Maintenance Services Of Continuous Water Quality Monitoring Systems (CWQMS) in Chhattisgarh State. All bids should be addressed to:

Member Secretary  
Chhattisgarh Environment Conservation Board  
Paryavas Bhavan,  
North Block Sector-19,  
Nava Raipur, Atal Nagar (C.G.) 492002  
Phone: 0771-2512220  
E-mail: hocecb@gmail.com

Bids received after the due date will be rejected.

The document can be downloaded from the website <http://www.enviscecb.org> or <https://eproc.cgstate.gov.in> . The parties are advised to study the document carefully. Submission of response to this Request for Proposal shall be deemed to have been done after careful study and examination of this document with full understanding of its implications. Bidders must ensure that they submit all the required documents indicated in the RFP document without fail. Bids received without supporting documents for the various requirements mentioned in the tender document are liable to be rejected at the initial stage itself. The data sheet for all the components should be submitted by the Bidder for the scrutiny.

**Chhattisgarh Environment Conservation Board reserves the right to accept or reject in part or full any or all the offers without assigning any reasons.**

## **DISCLAIMER**

The information contained in this Request for Proposal (hereinafter referred to as "RFP") document provided to the Bidders, by the Chhattisgarh Environment Conservation Board, Nava Raipur, hereinafter referred to as CECB, or any of their employees or advisors, is provided to the Bidder(s) on the terms and conditions set out in this RFP document and all other terms and conditions subject to which such information is provided.

The purpose of this RFP document is to provide the Bidder(s) with information to assist in the formulation of Proposals. This RFP document does not aim to hold all the information each Bidder may require. This RFP document may not be appropriate for all persons, and it is not possible for the Chhattisgarh Environment Conservation Board, their employees or advisors to consider the business/investment objectives, financial situation and particular needs of each Bidder who reads or uses this RFP document. Each Bidder should conduct its own investigations and analysis and should check the accuracy, reliability and completeness of the information in this RFP document and where necessary obtain independent advice from appropriate sources.

Chhattisgarh Environment Conservation Board, their employees and advisors make no representation or warranty and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of the RFP document. Chhattisgarh Environment Conservation Board may, in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information in this RFP document.

## FACT SHEET

Sl. No.	Titles	Descriptions
1	Tender No.	07/HO/CECB/SCI/CWQMS/E-Tender/2020-21 Chhattisgarh Environment Conservation Board, Nava Raipur (CECB)/2020
2	Scope of Work	Supply, Installation, Commissioning, Operation Maintenance And Services Of On-Line Continuous Water Quality Monitoring Systems And Data Connectivity In Chhattisgarh
3	Name of the tender issuer	Chhattisgarh Environment Conservation Board
4	Date of issue of tender document	01/09/2020
5	Last date for sending Pre Bid Query	10/09/2020
6	Pre Bid Meeting	A Pre-Bid meeting will be held on 17/09/2020 at 03:00 PM at Chhattisgarh Environment Conservation Board (CECB), Nava Raipur
7	Pre-bid query response would be published on	24/09/2020
8	Last Date for Submission of Bids	01/10/2020 Time: 03:00 PM
9	Physical submission of EMD (in the form of DD)	01/10/2020 by 03:00 P.M. along with Technical Bid as per instructions of the RFP.
10	Date of Opening of Technical Bids	01/10/2020 at 04:00 P.M.
11	Date of Presentation	To be informed later through e-mail
12	Date of Commercial Bid opening	To be informed later through e-mail (Bidder should furnish the e-mail of one authorized representative)
13	Place of Physical Submission of EMD	Chhattisgarh Environment Conservation Board (CECB), North Block Sector-19,Nava Raipur (C.G.) 492002 Time : upto 03: 00 P.M.
14	Address for Communication	Member Secretary, CECB
15	Cost of Tender Document	Non-refundable Rs 5000/- (Rs. Five Thousand only) through Demand Draft ( <b>in Hard copy in Envelop A</b> ) payment in the name of Member Secretary, Chhattisgarh Environment Conservation Board.
16	Earnest Money Deposit (EMD)	Rs. 2, 00, 000/- (Rupees Two Lakh only). EMD should be submitted in <b>Demand Draft only</b> in the name of Member Secretary, Chhattisgarh Environment Conservation Board: <ul style="list-style-type: none"> <li>• <b>Original copy of the DD</b> should be submitted in <b>Envelop I - A</b> to Chhattisgarh Environment Conservation Board on 01/10/2020 by 3:00 PM along with Technical Bid as per instructions in the RFP.</li> <li>• <b>Copy</b> of the Demand Draft should be uploaded in the e-procurement system through <a href="https://eproc.cgstate.gov.in">https://eproc.cgstate.gov.in</a></li> </ul>
17	Validity of Proposal	Proposals must remain valid for 180 days after the submission date.
18	Bid Submission	The Bidding will be in three parts through E- Tender system, Two envelopes (Envelop A & B) in Hard Copy as well as in online mode. However, Envelop C (Financial Bid) should be submitted in Online mode only. <b>Refer Section (I)- B "Procedure for Submission of Tenders"</b>
19	Availability of Tender Document	Tender can be downloaded from <a href="https://eproc.cgstate.gov.in">https://eproc.cgstate.gov.in</a> or <a href="http://www.enviscecb.org">http://www.enviscecb.org</a> .

Note : This tender was published in newspaper on 27/3/2020 and was supposed to open on 28/4/2020, but due to Covid lockdown in the country, the dates of bid submission have been extended to 01/10/2020.

## **(I) INTRODUCTION**

Chhattisgarh Pollution Control Board (CECB) desires to procure for supply, installation, commissioning, operation maintenance, services of on-line Continuous Water Quality Monitoring System and its data display at 10 (Ten) locations in Chhattisgarh at the upstream and downstream of the following Five River Polluted Stretches:

- [i] Hasdeo - Korba to Urga - 20Km
- [ii] Kharoon - Raipur to Bundari - 20 Km
- [iii] Mahanadi - Sihawa to Arrang - 70Km
- [iv] Seonath - Bemta to Simga - 10Km
- [v] Kelo - Raigarh to Kanaktora - 15Km

Sealed tenders are invited from the reputed manufacturers [approved by BIS/ISO] or their authorized representatives, specially authorized for this tender, who are capable of supply, installation, commissioning, operation maintenance, services of on-line Continuous Water Quality Monitoring System and its data display as per the RFP. The terms and conditions are as follows:

### **[A] SPECIAL CONDITIONS:**

1. Prices should be quoted for supply, installation, commissioning, operation maintenance, services of on-line Continuous Water Quality Monitoring System and its data display including the cost of minor civil works, electrical fittings and cabling etc.
2. The technical specifications of the CWQMS are given. The technical specifications of the offered CWQMS should be furnished in annexure –1.
3. The equipment offered should necessarily contain a guarantee for its trouble free performance for a period of 2 year. Thereafter, the tenderer will maintain the equipment during O & M period i.e 5 years.
4. The offer should clearly mention make, name of the manufacturer, detailed specifications, detailed literature about the equipment/circuit diagram/drawing of the mechanism and any other information relevant to the equipment. For any printing error / mistake in final bid will be the responsibility of the tenderer and no correspondence will be entertained by the Board in future.
5. The tenderer should furnish details of supplies made by him to important institutions, along with performance certificate, during last one year [Users' list].

The tenderer must submit Client list along with the previous purchase order copies of similar item[s] supplied to any Central /State Pollution Control Boards / any CSIR Laboratory.

6. The firm / manufacturer submitting the offer shall only quote for one most suitable model of the offered equipment whose specification matches the Board's specifications. No alternate offers shall be considered and, if submitted, the offer shall be rejected.
7. Earnest Money Deposit (EMD) be furnished by a demand draft in favour of Member Secretary, Chhattisgarh Environment Conservation Board (CECB), North Block Sector-19, Nava Raipur (C.G.) 492002 in Envelope "A". Offers without Earnest Money Deposit (EMD) shall not be considered and the relevant Envelopes [B & C] will not be opened and their offer shall be treated as rejected.
8. Tenderer suing downloaded tender forms must submit tender fee by demand draft along with Earnest Money Deposits (EMD) in Envelope "A" drawn of Member Secretary, Chhattisgarh Environment Conservation Board (CECB), North Block Sector-19, Nava Raipur (C.G.) 492002. The tender will not be accepted from the firm to whom the document is not issued by the Board and the bid downloaded from net without tender fee will not be accepted.
9. The tenderer shall have to submit the copy of sales tax registration and Income Tax registration [PAN] along with Envelope "B" otherwise the offer shall be liable for rejection.
10. An undertaking shall be submitted by the tenderer that they are not black listed in any Govt. organization / institutions along with Envelope "B".
11. The tenderer shall provide exclusive company profile including necessary certificates / license for manufacture the product from DGTD/SSI/SIA etc.
12. The specifications are clearly mentioned in the document and the Tenderer is requested to submit Bid only if their offer strictly comply with these specifications. Please note that no deviation in the required specification will be permitted. The bidding for the instruments having different specification will be on Tenderer's risk as the Board will not entertain such Bids.

**[B] PROCEDURE FOR SUBMISSION OF TENDERS:**

Each tenderer shall submit his offer in three sealed Envelopes A, B and C. Envelope “A” shall contain Earnest Money Deposit (EMD) and tender cost, if the tender document is downloaded from the web site. The Envelope “B” should contain technical specification, terms & conditions, company profile, copy of sales tax registration number, PAN number and authorization certificate from manufacturer for submission of offer for this tender, if offer is submitted by authorized representative. Envelope “C” shall contain financial offer.

- i. **Envelope – “A”** : Envelope “A” should contain demand draft for the requisite amount of Earnest Money Deposit (EMD) in favour of Member Secretary, Chhattisgarh Environment Conservation Board (CECB), North Block Sector-19, Nava Raipur (C.G.) 492002. If the tender document is downloaded from web site, then separate Demand Draft for tender cost shall be submitted with Envelope” A”. The name of instrument and the amount of the demand draft should be inscribed on the top of Envelope. Envelope “A” & “B” shall be opened on 28/04/2020 at 4.00 pm in the presence of the tenderer or their authorized representatives. Insufficient amount furnished as earnest money and tender cost shall make the offer liable for rejection.
- ii. **Envelope – “B”**: Tenderer, who has furnished the desired amount of earnest money and tender cost, shall be liable for opening of the Envelope “B” of their offer. The Envelope “B” should contain detailed technical specifications in annexure –1, make & model of the equipment, functioning procedure of the equipment and other literature relevant to the equipment and company profile. If the offer is submitted by authorized representative, he should submit authorization letter in Envelope “B” from the manufacturer for submitting offer for this tender, otherwise tender offer of the firm shall not be considered and liable for rejection. The tenderer should furnish users’ list and details of supplies made by him to important institutions along with performance certificate. The tenderer shall have to submit the copy of sales tax registration and income tax no. [PAN] along with the Envelope “B”, otherwise the offer shall be liable for rejection. An undertaking shall be submitted by the tenderer, regarding whether they are not black listed in any Govt. organization / institutions, along with Envelope “B”. The details of service station in Chhattisgarh and India should be

furnished with other details. Envelope “A” & “B” will be opened on dated 28/04/2020 at 4.00 pm.

- iii. **Envelope – “C”** : The Envelope “C” shall contain financial offer in annexure 3 or 4 [whichever is applicable] of the tender document shall be submitted online only. Offers received in due time shall be evaluated technically by a committee constituted by the Member Secretary, Chhattisgarh Environment Conservation Board (CECB) and as per the recommendation of committee, depending upon the suitability of equipment with respect to application, performance, after sale service and service centres in Chhattisgarh or in India etc., the date of opening of financial offer will be informed to Technically selected bidder only and negotiation will be done thereafter. Notwithstanding anything stated above the competent authority of the Board reserves the right to assess the capability and capacity of the tenderer to perform the contract, should the circumstances warrant such an assessment in the overall interest of the Board.

**NOTE: If the office happen to be closed on the last date of submission of the tender as specified in the tender, will be received and opened on the next working day at the same time and venue.**

**[C] OTHER CONDITIONS:**

1. The Board reserves its rights to reject any or all the tenders without assigning any reason there for.
2. Tender found incomplete shall be rejected forthwith.
3. The indigenous equipment, for which an order has been placed, after acceptance of the tender, shall have to be delivered, installed & demonstrated to the consignee mentioned in the supply order within 30 days from the date of issue of supply order. In case of late supply of the material, 2% per month penalty shall be charged up to one month, there after supply order shall be treated as cancelled and earnest money shall be forfeited and the supply order shall be issued to the second lowest firm. The maximum penalty for late supply shall not exceed 10% of the total ordered value. In case of unavoidable delay in supply a prior permission shall be obtained for extension in delivery period.
4. The time limit for the supply of imported equipment shall be 30 days, which can be relaxed for additional 15 days by the Member Secretary, Chhattisgarh Environment Conservation Board (CECB). After scheduled time limit, 2% per



month penalty or maximum penalty up to 10% of the total ordered value should be levied.

5. If the tenderer is not a manufacturer himself, should have a facility for repairing and maintenance of the instrument. The details of service centres in Chhattisgarh and India should be furnished along with other details.
6. It shall be the responsibility of the tenderer to deliver the material to the consignee in sound condition without any damage. Any damage or loss during transit shall be on the account of the tenderer.
7. The tenders shall be valid for a period of 30 days from the date of opening of Envelope "A".
8. The prices should include all taxes like sales tax, excise tax or any other tax.
9. The approved firm / manufacturer shall have to submit 10% security deposit of the ordered value in the form of Bank Guarantee for a period of one year, only after that work order for supply, installation, commissioning, operation maintenance, services of on-line Continuous Water Quality Monitoring System and its data display will be issued.
10. In case the approved tenderer fails to effect supply, within the specified period as per work order, the earnest money and security deposit is liable to be forfeited.
11. The consignee or any other officer authorized by the Board shall have the right to reject any or all the items of the supply, if they do not confirm to specifications mentioned in the supply order. The rejected items shall be lifted by the tenderer at their own cost. The consignee will not be responsible for the custody and safety of such items.
12. The Board reserves its rights to affect any reasonable increase or decrease in the quantity or number of items at the time of issue of supply order in the interest of the Board.
13. All the clearance including the obtaining NMI [Not manufactured in India] certificate, custom clearance and custom duty will be the responsibility of the tenderer. This office will open the letter of credit [L/C] as may be required and will only sign the documents wherever required.
14. In case, if any supplier quote their rates in Indian Rupees for imported equipment and do not require custom duty exemption certificate from the Board, then the supplier has to submit import document like bill of entry, custom

duty paid and NMI [Not manufactured in India] certificate from the manufacturer.

15. The tenderer is expected to examine all instructions, forms, terms and conditions and specifications mentioned in the bid document. Failure to furnish all information required by the bid documents or submission of inadequate bid and not substantially responsive to the bid document in every respect will be at the tenderer's risk and may result in the rejection of its bid.
16. The terms of payment shall be as under:
  - a) 25 % payment will be released against delivery.
  - b) 25% after installation, commissioning and data transfer of CWQMS
  - c) 25% will be paid after 90 days after satisfactory working of CWQMS & its data display & validation of data by competent authority constituted by the Board.
  - d) The mode of remaining 25% payment will be mentioned in the work order.
17. Conditional offers will not be accepted and liable for rejection.
18. In case of human error regarding labeling of Envelope, the committee constituted for the opening of Envelope shall take appropriate decision.
19. In case of any dispute the decision of Member Secretary, Chhattisgarh Environment Conservation Board (CECB) shall be final & binding.

***NOTE: The tenders shall be liable for rejection in breach of any of the special or other general conditions of the tender document and no correspondence in this regard shall be entertained in future.***

***Member Secretary  
Chhattisgarh Environment Conversation Board (CECB)***

**(II) TENDER AND CONTRACT FOR SUPPLY, INSTALLATION COMMISSIONING, OPERATION MAINTENANCE, SERVICE OF ON-LINE CONTINUOUS WATER QUALITY MONITORING SYSTEM AND DATA CONNECTIVITY**

**[A] GENERAL RULE AND DIRECTIONS FOR THE GUIDANCE OF SUPPLIERS**

1. All suppliers proposed to be obtained by contract will be notified in a form of invitation to tender posted in public places/News Paper.
2. The tender form will State the supplies to be made, as well as the date for submitting and opening tenders and the time allowed for supply, also the amount of earnest money to be deposited with the tender.
3. In the event of tender being submitted by a firm it must be signed separately by each member thereof or in the absence of any partner, it must be signed on its behalf by a person holding a power of attorney authorizing him to do so, such power of attorney should be produced with the tender and it must disclose that the firm is duly registered under the partnership Act.
4. Any person who submits a tender shall fill up usual printed form stating at what rate he is willing to undertake supply of each items. Tender which propose any alteration in the work/supply specified in the said form of invitation to tender, or time allowed for carrying out work/supply will be liable for rejection.
5. The tender committee will open tenders in the presence of any tenderer who may be present at the time and will enter the amount of several tenders in a comparative statement in a suitable form. Receipts for earnest money will be given to all tenderers except those whose tenders are rejected and whose earnest money is refunded on the day that the tenders are opened.
6. The officer competent to dispose of the tenders shall have the right of rejecting all or any of the tenders.
7. Site Locations may be visited by any tenderer before tendering by making contact with Member Secretary, Chhattisgarh Environment Conservation Board (CECB), North Block Sector-19, Nava Raipur (C.G.) during office Hours.

**[B] CONDITIONS OF CONTRACT**

1. If the Tenderer shall be hindered in the supply of the materials so as to necessitate an extension of the time allowed in this tender he shall apply in writing well in advance or immediately after the cause occur to the Member

Secretary, Chhattisgarh Environment Conservation Board (CECB) who shall if in his opinion (which shall be final) reasonable grounds be shown therefore authorize such extension for a period not exceeding in 15 days. Any further extension shall be subject to the previous sanction of the competent authority.

2. The supplier shall give notice to the Officer In-charge /consignee officer of his intention of making delivery of materials and on the materials being approved a receipt shall be granted by him to the Officer In-charge /Consignee Officer or his assistant, and no material will be considered for payment until so approved.
3. Supply, installation, commissioning, operation maintenance, services of on-line Continuous Water Quality Monitoring System and its data display supplier shall be furnished with a certificate by the Officer In-charge /Consignee Officer of Chhattisgarh Environment Conservation Board (CECB).
4. The material shall be of the best description and in strict accordance with the specification and the supplier shall receive payments for such service only as are approved and passed by the Officer In-charge /Consignee Officer.
5. In the event of materials being considered by the Officer In-charge /Consignee Officer to be inferior to that described in the specification the supplier shall on demand in writing forth with remove the same at his own charge and cost and in the event of his neglecting to do so within such period as may be named by the Officer In-charge /Consignee officer that officer may have such rejected material removed at the contractor's risk and expense incurred being liable to be deducted from any sum due or which may become due to the supplier.
6. Receipts for payment made on account of a Supply & Service when executed by a firm must also be signed by authorized signatory.
7. Under no circumstances whatever shall the contractor be entitled to any compensation from Board on any account.
8. The supplier shall supply at its own expense all tools, plant & implements required for the due fulfillment of his contract and the materials shall remain at his risk till the contract gets completed.
9. No materials shall be brought to site or delivered on Sunday/holiday without the written permission of the Consignee Officer.
10. The supplier shall not sublet this contract without the written permission of the Member Secretary, Chhattisgarh Environment Conservation Board (CECB), North Block Sector-19, Nava Raipur (C.G.). In the event of the contractor

subletting his contract without such permission, he shall be considered to have thereby committed a breach of the contract, and shall forfeit his earnest money and shall have no claim, for any compensation for any loss that may occur from the materials he may have collected or engagements entered into.

11. The decision of the competent authority Member Secretary, Chhattisgarh Environment Conservation Board (CECB), North Block Sector-19, Nava Raipur (C.G.), shall be final, conclusive & binding on all parties to the contract upon all questions relating to the meaning of specification and instructions herein before mentioned and as to quality of materials or as to any way arising out of, or relating to the contract specifications, instruction orders of these conditions or otherwise concerning the supplies whether arising the progress of after the completion or abatement thereof.
12. On the breach of any term of condition of this contract by the supplier, the said competent Authority shall be entitled to forfeit the earnest money, security deposit and the balance thereof that may at that time be remaining and to realize and retain the same as damages and compensation for the said breach but without prejudice to the right of the said Board to recover any further sums as damages from any sums due or which may be come due to the contractor by Chhattisgarh Environment Conservation Board (CECB), or otherwise howsoever.

**[C] QUALIFICATION CRETERIA FOR THE BIDDERS FOR THE PROJECT:**

The Tenderer/Bidders shall need to qualify the following criteria to Bid for the mentioned job.

1. The Bidder should have a registered company /Office in India with at least 3 years of running track record of the organization.
2. The bidder should have experience of supply, installation commissioning, operation and maintenance and data transfer of at least 3 nos. Continuous River water quality monitoring system to State Pollution Control Board/ Central Pollution Control Board via Server or Cloud. Documentary Proof is required to be submitted.
3. The Average financial turnover of the bidder during the last three (03) years should be at least 5.00 Crores from the date of opening of the tender. The bidder has to provide the notarized balance sheet.

4. The Bidders should have supplied the system to measure at least 5 parameters asked in the tender Online to at least 03 Locations in India and all the systems supplied should have been installed, commissioned and should be running at least for the past 2 years.
5. Proof In terms of Purchase Order and Satisfactory letter from the client shall be submitted by the bidder.

**[D] Scope of Work**

This project is planned for the Procurement of online Continuous Water Quality Monitoring system using standalone water quality monitoring stations/system powered with GSM / GPRS modem to be installed or any other available communication modes deployed to transmit the data at the scheduled interval of hourly average basis to a central server located at CECB, Nava Raipur from 10 different locations of polluted River stretches. The desired online parameters required to be monitored and displayed are pH, Temperature, Conductivity, Dissolved Oxygen (DO), Bio-chemical Oxygen demand (BOD) and Nitrate. The desired offline parameters required to be monitored are Faecal Coliform & Total Coliform.

- [i] The Bidder must provide a material availability certificate mentioning that they should supply the material within 15 days from the date of issue of work order.
- [ii] The true / validated data from all the desired locations shall only be transmitted to the Central Server at CECB, Nava Raipur.
- [iii] Central Server shall possess the capability to receive, analyze and archive the data received from the Remote stations.
- [iv] The trained data analyst (to be provided by the bidder) shall be available round the clock to qualify / analyse the received data from all the 10 stations for contract period. Proper training shall be imparted to persons assigned by CECB.
- [v] The qualified / analyzed data shall than be displayed on local displays (Data display board - a total of 5 nos) (Refer Volume II “Technical Specifications” - Specifications Of Day Light & Night Visible Data Display System) install at each location and other location as decided by Board shall remain in the scope of the bidder.
- [vi] All 10 Stations shall be manned for 24 × 7 remains in the scope of the bidder during the contract period to ensure seamless Continuous Water Quality Monitoring Data from the Water Quality Monitoring Stations. Bidder has to provide security guards on permanent basis to take care of the CWQMS during the warranty period.

- [vii] Complete supply, installation and commissioning shall be in the bidder's scope. All manpower and tools etc., software required shall be in the bidder's scope.
- [viii] Laying of all cables for installation and commissioning of Online Continuous Water Quality Monitoring Station shall be in bidder's scope of work.
- [ix] Vendor will supply 100% material within 15 days from the date of awarding the Work order to the vendor. Installation and commissioning activity shall be completed within the 15 Days from the date of receiving 100% material.
- [x] The full insurance of the offered CWQMS shall be in the bidder scope during the warranty period.
- [xi] The bidder must note that all the accessories Consumables, Installation, commissioning service and operation related work shall be in the bidder's scope.
- [xii] Successful tender would bear the cost of insuring the equipment and facilities against any theft, fire, natural calamity and deployed manpower during contract period.
- [xiii] If any break down in CWQMS occurs it will have to be rectified without any delay for this bidder should have CWQMS/Sensors in spare.
- [xiv] After installation of CWQMS if the situation arises Supplier will have to undertake the shifting of the instrument from the location of installation to another location within Chhattisgarh.
- [xv] The bidder shall take responsibility of shifting and de-attachment of CWQMS before monsoon and installation after monsoon within Chhattisgarh during service period.

#### **[E] DETAILS OF PROJECT STRUCTURE**

Successful Tenderer would be awarded the project/work under a Supply and Service Agreement, which would entail:

- [i] Supply, installation and Commissioning of 10 (Ten) Sets of CWQMS Equipment at the defined locations at Chhattisgarh
- [ii] Operation and Maintenance of the CWQMS for Five (05) year of warranty from the date of it's commissioning.
- [iii] Daily reporting of data pertaining to Water Quality to CECB. CECB would make payment for CWQMS as per schedule of requirement, for Supply, Installation and Commissioning of the system. CECB would procure all the CWQMS equipment on its name. CECB will make regular payments for the O&M and supply of Data at the end of

each Month. The tenderers therefore need to quote for supply, installation, commissioning, operation maintenance and services of on-line Continuous Water Quality Monitoring Systems and its data display for period of Five (05) year.

## **1.0 SCOPE OF SERVICES**

The Scope of Works under the package shall include:

- I. The supply is including packing, transportation, insurance, custom clearance, port clearance and handling, inland transportation, inland transit insurance and delivery to site, installation, testing and commissioning of equipment and provision of training of CECB officials.
- II. Operation & Maintenance of water quality Monitoring Stations for a period of Five (5) year from the date of commissioning of the station, which can be extended up to Two (2) years at the mutually agreed rates and terms and conditions.
  - a. Data & Report of data pertaining to CWQMS to CECB.
  - b. On line transfer of data to CECB.

## **2.0 MINIMUM TECHNICAL SPECIFICATIONS**

The minimum technical specification requirements for the CWQMS to be installed are given in (Technical Specifications Vol - II) of tender document. However, the actual technical proposal can have higher or better technical performance parameters and the minimum specifications proposed should not be taken as a constraint on the upper side. The technical specifications given in tender documents are descriptive and Selection Committee can consider technical proposals having similar specifications.

## **DATA MANAGEMENT AND QUALITY CHECKS**

Data shall be collected and validated according to APHA & Other BIS standards. Successful tenderer shall submit a Standard Operating Procedure for the water quality monitoring station to the Board before award of contract. This Standard Operating Procedure shall be approved by the Board prior to award. The Standard Operating Procedure shall contain the following:

- a) Operating procedures for all analyzers
- b) Calibration procedures



- c) Calibration schedule Maintenance procedures
- d) Maintenance schedule
- e) Data validation procedures
- f) Data reporting as per attachment
- g) Data obtained from these calibration checks and copies of associated Quality Assurance and calibration documentation, shall be submitted to the Board along with the water Quality Data.
- h) Inventory of spares and consumables to be maintained and recorded from time to time and a buffer stock for any eventuality to be maintained.

## **GENERAL GUIDELINES**

- I. **Working Hours:** The site for CWQMS operation should be manned by the employees of the Successful Tenderer for 24 hours a day. In addition the Successful Tenderer would arrange for a security of the site and equipments through appointment for security agency.
- II. **Insurance:** Successful Tenderer would bear the cost of insuring the equipment (Comprehensive) and facilities against any theft, fire natural calamity like flood and other applicable provisions during tenure of contract period including O&M with a copy to CECB of an appropriate amount.

## **OPERATION & MAINTENANCE OF WATER QUALITY MONITORING STATIONS**

The Contractor's responsibilities shall include without limitations the following works to be carried out on the water Quality Monitoring Stations installed under this Contract during the Operation & Maintenance of the stations:

- a) Operation and Maintenance of all the commissioned equipments and amenities as supplied by the Manufacturer under the Contract including services during forced and planned outages and overhauls.
- b) The Contractor shall take over the entire water Quality Monitoring Station (including all equipment) for O&M after execution of Indemnity Bond as per format placed at Attachments of tender document.
- c) The Contractor shall provide to the owner a monthly summary of all operation and maintenance activities performed by the contractor during each month.

- d) **Operation and Maintenance Obligations:** In implementing its obligations to operate and maintain the facility under this Contract, the Contractor shall:
- [i] Undertake comprehensive maintenance including i.e. schedule and breakdown maintenance & repair at site and keep Board Informed regarding status of equipments and forward daily data as per Attachments.
  - [ii] Obtain permission from the owner and inform the O&M for any assistance for which equipment is required to be sent to the works. Contractor shall arrange substitute equipment to keep CWQMS station operational.
  - [iii] Take reasonable action to assure that the Personnel deployed at water Quality Monitoring Stations and any subcontractors and agents are provided with a work place in compliance with applicable Law.
  - [iv] Keep the water Quality Monitoring Stations clean, well maintained and in good working condition.
  - [v] Security: It is the duty of the Contractor to secure the movable, immovable and other properties of the Owner at the water Quality Monitoring Station. The Contractor shall indemnify the loss caused to the Owner on account of any damage, loss or theft caused to the property of the Owner.
  - [vi] Scheduled Maintenance: Unless Owner and Contractor mutually agree otherwise, perform all required Scheduled maintenance for all equipment, auxiliaries etc., in accordance with the O&M specifications.
  - [vii] Unscheduled maintenance: Perform all unscheduled maintenance and repair for all equipment auxiliaries etc. within (24) hours of the occurrence of the event requiring Unscheduled Maintenance, the operator shall provide the Owner with detailed written information on nature of the repair or replacement to be carried out, estimated down time and other necessary details as required.
  - [viii] The Contractor shall source all the spares required for maintenance & repair of the installed equipment from O&M only.
- e) **The Operator shall not:**
- [i] Make any modifications as to the Water Quality Monitoring Stations, other than in an Emergency, without the prior written approval of the Owner, or
  - [ii] Dispose off any assets, settle law-suits or engage in transactions relating thereto on the Owner's behalf without the prior written approval of the Owner.

- f) The Contractor shall purchase spare parts, materials, supplies and other consumable items, and maintain an inventory thereof, for the Water Quality Monitoring Stations. All such material supplied and other items shall be the property of the Contractor. However all the spares shall be sourced from OEM's only.
- g) The Contractor shall review all applicable Laws and initiate and maintain such prosecution, procedures and operating plans relating to operation of the Water Quality Monitoring Stations as are necessary to comply therewith or assist the owner in complying therewith as the case may be.
- h) The Contractor shall operate the equipment as per the laid out standards in the operating manual of the equipment and providing data for water to CECB on daily basis in the suggested format. The daily monthly and yearly Reporting Formats should be maintained.
- i) The CWQMS has to be in operation for a minimum of 90% of the days in a year, 24 hours a day, and should not be inoperable for more than 7 days at a stretch.
- j) Provide data collected through operation of the equipments on daily basis in suggested output formats given in the tender document.
  - [i] Establish and maintain a daily and monthly and yearly reporting system to provide storage and ready retrieval of operation and maintenance data including such information necessary to verify calculations. The monthly reporting shall contain variances from targets.
  - [ii] Provide access to the owner to the Water Quality Monitoring Stations and its data at all reasonable times and as and when required.
  - [iii] Provide the operational data required to all competent authorities including, Government of India or concerned State Governments.
  - [iv] On line transfer of data to CECB web site.
- k) The Contractor shall ensure accuracy of the data provided as per standards.
- l) The contractor shall ensure periodic re-calibration of all the equipments and maintain protocol calibration.
 

Owner shall arrange for the following and Contractor shall guide and assist the Owner:

  - a) The Owner shall pay O&M charges to the Contractor as mentioned as payment condition in work order after submission of validated data.
  - b) Owner shall pay all fees including Service Tax, etc., imposed upon Owner by the Applicable Law.

- c) The Owner shall identify and hand over the site for erection & commissioning of Water Quality Monitoring Stations free from all encumbrances.
- d) The Owner shall make the arrangement for electricity & telephone connection at the site. However monthly charges for both electricity and phone bill shall be borne by the Contractor.
- e) The valid data capture rate should be minimum 90%. The full payment shall only be made if validated data is 90% and all the calibration protocol maintenance scheduled and spare parts/ consumable replacement document are maintained and verified by the owner/ board. The contractor has to maintain records / Receipts/ bills paid available as and when required.

**Handing Over of Station:** On expiry/closure/termination of the Contract Agreement, stations shall be handed over to Board in working condition to the satisfaction of Board. Few or all the spares procured by the Contractor and unused as on date of handing over may be purchased by the Owner at his discretion provided Contractor is able to provide reasonability of the costs of such spares. In addition the Contractor shall provide consumables equivalent to three months consumption on expiry/closure/termination of the Contract Agreement without any extra financial implication.

**Penalties:**

During O&M period, in case of any Analyses/ system failure, penalty will be charged by CECB @ Rs.1,000/- (one thousand) per day per Analyzer after a grace period of seven (7) continuous non-working days. The grace period of seven (7) continuous nonworking days shall be given only once per quarter (3 months).

For a failure of Data display:

Board/panel, a penalty will be charged by CECB @ Rs. 1,000/- (one thousand) per day after a grace period of five (5) continuous non-working days. The grace period of Five (5) continuous non-working days shall be given only once per quarter (3 months). Failure due to power outage and other Force Major conditions shall not be considered for levy of penalty.

Total penalty per year during O&M period on account of above conditions shall be limited to 30% of total O&M charges for one year. Failing which defective/ malfunctioning analyser / system has to be replaced.

In case penalty in the year exceeds 30% as above, the Contractor shall be required to replace the defective analyzer (s) or systems with new ones at his own cost, failing which the CECB shall have the right to terminate the O&M contract.

## **SCHEDULE**

Contractor shall complete all activities covered in the scope of work up to installation & commissioning of Water Quality Monitoring Stations within 30 days from date of opening of Letter of Credit.

The Contractor shall carry out Operation & Maintenance of Water Quality Monitoring Stations for a period of one year from the date of commissioning of the station, which can be extended up to further two (2) years at the mutually agreed rates and terms and conditions.

The operation and maintenance contract shall be executed by the concerned Authorized Officer of Chhattisgarh Environment Pollution Control (CECB) having jurisdiction or the area under his control. The term and condition shall be governed as per the tender document.

After successful tendering all remaining contract/agreement & other paper work will be done as per standard format adopted by Board as in other tendering procedure.

## **7.0 VALIDATION OF DATA**

Data that is delivered to the Employer by the Service Provider as part of this contract will be subjected to a data validation process. The data validation process, handled under a separate contract, will use the Service Provider's – audit self (calibration) process to qualify the data for purchase in addition to inspecting the data for artifacts and irregularities.

### **DATA COLLECTION**

Data will be collected from 10 locations which will comprise 10 fixed stations for measurement of hourly data for 24 hours.

#### **Data Collection and Delivery**

All hourly and 24 hourly water quality data from all locations will be delivered initially to the Service Provider's the Employer dedicated Data Centre on server real time basis. Such server shall be set up and maintained by the Service Provider at his cost throughout the duration of the contract. The data will immediately on receipt be transferred from the Service to the Provide Employer's server housed in the same Data Centre on real time basis. The Service

Provider shall provide the data as text files, one file for each transmission and the data will be placed in a directory as indicated by the Employer/Data Qualification Consultant.

### **Data Collection**

The fixed stations will measure water quality parameters once per hour  $\pm 5$  five minutes and transfer all log data within 5 minutes of measurement.

### **Data Storage**

The Service Provider shall store all real-time data collected during the duration of the contract. This storage shall be 100% online. This means that any data values can be called up instantaneously through the duration of the contract. In the event of any contingency, the Service Provider will provide access on the Employer's downloading any part or the entire database maintained.

## **QUALITY ASSURANCE AND CONTROL THROUGH SENSOR CALIBRATION**

The Service Provider is required to perform regular calibration and adjustment of Instruments using traceable standards as available.

### **Calibration Frequency**

All instruments shall be calibrated at frequencies no longer than once every seven days. If the instruments are not calibrated within the seven days since the previous calibration, then any data delivered will not be taken up for validation and hence the same shall not qualify for payment. However, after the calibration is done and the same is witness by the Official of CECB, data will then be considered for validation/payment.

### **Traceable Standards**

The Service Provider will use portable meters for calibration of the sensors and the calibration be traceable to NIST standards. In case of two consecutive calibrations the "drift" found more is than double of the accuracy ranges indicated in the table of specification the Service Provider will require to replace the instrument.

### **Calibration Results**

Upon completing field calibration, the station parameters will be set to match the calibration results.

### **Documentation**

The results of the sensor calibration will be documented and made available in real-time on Employer's Data. The Centre calibration entry must include the date, time, station, sensor

initial reading, sensor adjustment through calibration, sensor final reading, comments on general station/sensor observations, and names of person(s) present during the calibration.

#### **10.0 COMPLETENESS OF DATA REQUIREMENT FOR PAYMENT**

The Service Provider shall maintain the equipments and sensors are in good working order throughout the period of contract. Data supplied for any hour shall be considered for validation and payment provided following conditions are satisfied:

- a) Measurements must be received from at least 90% of the total locations , and
- b) The measurements received from each such location shall not be less than 90% of the measurements specified for it.

**TENDER SPECIFICATIONS VS OFFERED SPECIFICATIONS**

<b>Sl. No.</b>	<b>Tender Specifications</b>	<b>Offered Specifications</b>	<b>Documentary evidence/ leaflet Enclosed</b>

**Signature of the Tenderer : -----**

**Name : -----**

**Business Address : -----**

**Place : -----**

**Date : -----**



**PRICE SCHEDULE FOR ANNUAL MAINTENANCE AND REPAIR CHARGES**  
**AFTER WARRANTY PERIOD**

Sl. No.	Item Description	Qty.	Annual Maintenance & Repair charges for each unit including supply of spares [Price to be quoted either in Indian Rupees or in Foreign currency] Excluding guarantee period	Maintenance and Repair charges for 3 years, Including supply of spares.

**Note:** In case of any discrepancy between unit price and total price, the unit price shall prevail.

**Signature of the Tenderer : -----**

**Name : -----**

**Business Address : -----**

**Place :-----**

**Date : -----**

**PRICE SCHEDULE FOR GOODS IMPORTED**

1	2	3	4	5	6	7
Sl. No.	Description	Country of origin	Quantity	Unit Price CIF	Total CIF Price per item	Unit price of Inland delivery to final destination and unit price of other incidental services.

**Note:** In case of any discrepancy between unit price and total price, the unit price shall prevail.

**Signature of the Tenderer :** -----  
**Name :** -----  
**Business Address :** -----

**Place :**-----  
**Date :**-----

**PRICE SCHEDULE FOR GOODS INDIGENOUS**

<b>Sl. No.</b>	<b>Name of equipment with make &amp; model</b>	<b>Unit Price in Rupees</b>	<b>GST or Any other Tax/duty</b>	<b>Unit Price including all taxes up to final destination</b>

**Note:** In case of any discrepancy between unit price and total price, the unit price shall prevail.

**Signature of the Tenderer : -----**

**Name : -----**

**Business Address : -----**

**Place :-----**

**Date : -----**

**Attachment**

**INDEMNITY BOND FOR HANDING OVER CONTINUOUS WATER QUALITY  
MONITORING STATIONS INCLUDING ALL EQUIPMENT TO THE O&M  
CONTRACTOR**

This Indemnity Bond is made this ..... Day of 2020.....  
By.....a Company registered under the Companies Act, 1956/Partnership firm/  
Proprietary concern having its registered office at ..... (hereinafter  
called as “Contractor” or “obligator” which expression shall include its successors  
and permitted assigns) in favour of **Chhattisgarh Environment Conservation  
Board (CECB)** with Office at North Block Sector-19, Nava Raipur (C.G.) 492002  
which term shall include permitted assigns and successors, (hereinafter called  
“CECB” which expression shall include its successors and assigns).

Whereas CECB has awarded to the Contractor, a contract for O&M of the one no. of  
Continuous Water Quality Monitoring Stations (CWQMS) located at-----,  
vide its Letter of Indent / Award Letter / Contract No..... dated  
.....(hereinafter called the “Contract”), in the terms of which  
Contractor shall be responsible for the Equipments to be handed over to it by CECB  
for the purpose of performance of the Contract (hereinafter called the “Equipments”).  
Now, therefore this Indemnity Bond witnessed as follows:

That in consideration of various Equipments as mentioned in the Contract, valued at  
Rs.----- (Rupees.....) to be handed over to the Contractor for  
the purpose of performance of the Contract, the Contractor hereby undertakes to  
indemnify and shall keep CECB indemnified, for the full value of the Equipment. The  
Contractor hereby acknowledges receipt of the Equipments as per details in the  
Schedule appended hereto.

That the Contractor is obliged and shall remain absolutely responsible for the safe  
custody of the Equipments at Continuous Water Quality Monitoring Stations  
(CWQMS) belonging to CECB against all risks whatsoever till the Equipments are  
duly used in accordance with all terms of the Contract. The Contractor undertakes to  
keep CECB harmless against any loss or damage that may be caused to the  
Equipment.

The Contractor undertakes that the Equipments shall be used exclusively for the  
performance/ execution of the Contract strictly in accordance with its terms and  
conditions and no part of the Equipments shall be utilized for any other work or

purpose whatsoever. It is clearly understood by the Contractor that non-observance of the obligations under this Indemnity Bond by the Contractor shall inter-alia constitute a criminal breach of trust on the part of the Contractor for all intents and purposes including legal / penal consequences.

That CECB is and shall remain the exclusive Owner of the Equipment free from all encumbrances, charges or liens of any kind, whatsoever. The Equipments shall at all times be open to inspection and checking by Officer-in-Charge CECB shall always be free at all time to take possession of the Equipments in whatever form the equipments may be. If in its opinion, the equipments are likely to be endangered, misutilised or converted to uses other than those specified in the Contract, by any act of omission or commission on the part of the Contractor; he finds itself and undertakes to comply with the direction or demand of CECB to return the Equipments without any demur or reservation.

That this Indemnity Bond is irrevocable. If at any time any loss or damage occurs to the Equipments or the same or any part thereof is misutilised in any manner whatsoever then the Contractor hereby agrees that the decision of the Officer in-Charge of CECB as to assessment of loss or damage to the Equipments shall be final and binding on the Contractor. The Contractor binds itself and undertakes to replace the lost and / or damaged Equipments at its own or remedy that may be available to CECB against the Contractor under the Contract and under this Indemnity Bond.

Now the condition of this Bond is that if the Contractor shall duly and punctually complies with the terms and conditions of this bond to the satisfaction of CECB, then the above bond shall be void, but otherwise, it shall remain in full force and virtue.

In witness whereof, the Contractor has hereunto set its hand through its authorized representative under the common seal of the company, the day month and year first above mentioned.

**SCHEDULE NO. 1**

Particulars of the Equipments handed over	Quantity	Value of the Equipment	Signature of Authorised Person

For and on behalf of  
M/s.....

Name  
Signature  
Designation  
Authorized representative

Witness I

1. Signature
2. Name
3. Address

Witness II

1. Signature
2. Name
3. Address

(Common Seal)  
(In case of Company)

## Volume - II

### TECHNICAL SPECIFICATIONS OF CWQMS

The Remote Station for Water Quality Monitoring Station will include an advanced data acquisition terminal. The data acquisition system shall be appropriate for unattended, remote operation for continuous measurement of all parameters and with an onboard GPRS system & data storage memory of 4GB minimum as integral part. The CWQMS shall comprise of the following:

S.No	Particulars
1.	Data logger and transmission system with build in display, software, cables, high speed 100Mb/s ethernet interface for integration into larger networks, easy data transfer via USB-stick, process interface to SCADA via relay outputs, ..4-20mA, SDI12, Modbus RTU/TCP, Profibus DP, integration of third party sensors via 4-20mA ..inputs, SDI-12, MODBUS RTU/TCP easily extendable with additional analog and digital ..I/Os utilizing eight available extension slots, GSM/GPRS modem as integral part (must have minimum 3G modem and tested in India) should have the capability to be operated as controller or just a terminal, Internal integrated data logger with minimum data memory for up to 5,00,000 data sets. The system should start automatically after the power is reset to the system (in case of power failure), system should have service mode for cleaning (ultrasonic/compressed air), controller should storage the sensor configurations and calibrations, controller should have logbook to record the data.
2.	GSM/GPRS as integral unit of data logger terminal module
3.	Sensor package to include all multi-parametric or individual sensors indicated in specifications (sensors to be provided individually or collectively)
4.	Voltage regulator to get stabilized power supply & UPS in case of power failure
5.	Enclosures

#### Parameters to be measured and display Specifications:

Sr. No	Parameter	Ranges*	Resolution*	Accuracy*
1	pH	0-14 pH	0.01 pH	± 0.1 pH
2	Temperature °C	0 to 30 °C	0.01 °C	± 0.1 °C
3	Conductivity	0 to 70 mS/cm (0 to 70,000 µS/cm)	0.001 mS/cm (1 µS/cm)	± 0.01mS/cm (10µS/cm)
4	Dissolved Oxygen (DO)	0.0 to 12 mg/L	0.01 ml/L (1µmol/L)	± 1% of the reading
5	Biochemical Oxygen Demand (BOD)	0.0 to 50 mg/L (in River)	≤ 1 mg/L	± 10%
6	Nitrates	0 to 200 mg/L-N, 0 to 30°C	0.01 mg/L	±10%

\*Available information has been given above. However, the same will be finalized based on the inputs of the bidders.

### DATA ACQUISITION

Display	Easily readable display in bright sunlight. Display will allow viewing data from each sensor, as well as data from the charging system. VGA color-display 7" TFT
Keyboard/Mouse	To facilitate viewing of data as well as data downloads.
Sensor Inputs	Accommodate all sensors prescribed as well as additional inputs to be used for expansion of more sensors.
Programming	Ethernet, USB, WIFI, 3G Modem, Modbus RTU
Local Data Retrieval	USB portable flash drive and PC download. Unit shall allow local data retrieval (download) without use of a PC or other external device other than the portable storage media.
System Data Storage	All parameters, hourly average basis, for one year, Non-volatile memory of minimum 4GB has to integral part
Telemetry	GSM/GPRS compatible with Indian Telecom system and available at each station as terminal integral unit
Network Connection	WIFI 300Mb/s, Ethernet LAN, via modem
Integrated GPRS	On-board GPRS to provide precise location and elevation of the station. This information will be recorded by the data collection platform with transmitting the parameters
Operating Temperature	0 to 60°C
Operating Humidity	5 to 95% non-condensing
Power Input	12 VDC Nominal
Data Validation, Event Detection Software	Validated data and event detection software must be Performed at datalog terminal and must be integral part of terminal module at each station. Data transmission through the GPRS network.
and data Transmissions Tampering Alarms	System shall send alarm based on missing data, power supply malfunction, and door alarms.



## SPECIFICATIONS OF DAY LIGHT & NIGHT VISIBLE DATA DISPLAY SYSTEM

- 1 Size of display System : 8 feet x 12 feet (Rates may be quoted on per square feet basis)
- 2 Visibility range : 200 Meters (Day Time)
- 3 Nos. of display Line : 4
- 4 Display of colour elements : Multi Colour (Red, Green and Blue)
- 5 Minimum life span of the system : 10 Years
- 6 Smallest Character Size : 260 mm x 190 mm (approx.)
- 7 Operating and Non Operating Temperature : 0 – 50 ° C
- 8 Humidity Tolerance Range : 0 – 100%
- 9 Languages supported by the display : English & Hindi
- 10 Color Gradient : Cluster LED based
- 11 Display Characters (Example):

S. No.	Parameters	Concentration (Units)	Standard Limit (Units)
1	pH	---	---
2	Temperature	---	---
3	Conductivity	---	---
4	Dissolved Oxygen (DO)	---	---
5	Bio-Chemical Oxygen Demand	---	---
6	Nitrate	---	---
7	Faecal Coliform	---	----
8	Total Coliform	----	----

The display of above variable data should be supported with moving messages / slogans to be changed from time to time

12. Input Power requirement : Cluster LED based
13. Display Mounting : Weather proof casing to cope up with local condition
14. Computer System : Software compatible with latest version
15. General : The display system should be capable to transfer the data from computer to Display Board through Modem System. The system should also have the facility to display the environment message, environmental picture through video camera/VCR/CD player etc. for public awareness.
16. The rate should be quoted on per square feet basis inclusive of all necessary accessories including internet /electricity bill charges.
17. Supplier shall supply the upgraded software to use this Board's display the data from various installed RTWQMS/CAAQMS data through Central Server from MPPCB, Bhopal (ESC and Board's website) and also capable to displaying data from local installation of RTWQMS/CAAQMS over internet, converting the data in to displayable format for the display board and transmitting the data to multiple display board over through internet. UPS of 2 KVA with 4 Hrs. backup, leased line internet connection with atleast 2 MBPS, electric power supply and rain guard/canopy for display board should be supplied with the Boards. Bidder should have previous experience of similar nature with any Pollution Control Board or Govt. Institutions/Agencies.

## **OVERALL REQUIREMENTS & FEATURES OF ONLINE CWQMS**

- [i] All instruments must be operated according to the plug & measure principle. All measurement systems shall consist of standardized latest technology products are ready for use without the need for complex initial procedures on site.
- [ii] All instruments should be pre-calibrated.
- [iii] All instruments must have auto-diagnosis procedures are used to ensure best possible operation.
- [iv] No interference on analysis with chemical and physical basics of measuring sample.
- [v] Signal output must be analog, digital and must be compatible to data acquisition system.
- [vi] Signal output analog and digital function can be used for necessary basic controls
- [vii] Automatic data validation in system is pre-requisite to remove outliers, false alarms and give user friendly diagnostics to handle concerns.
- [viii] Must have flexible design to measure very low to high effluent / influent characteristics.
- [ix] Onboard event detection and validation software on system for decision making and to have optimum process controls.
- [x] Automatic Compensation to parameter cross sensitivities & matrix change.
- [xi] COD and BOD must have independent program for calibration, analysis and validation.
- [xii] Parameter calculation for one to another parameter such as COD to BOD to TOC is not recommended due to accuracy issues.
- [xiii] Validation & accuracy checks of system must have provision to perform with reference to known standards such as KHP (Potassium Phthalate etc) and Formazin standards and shall remain the bidder's scope.
- [xiv] Calibration shall be performed by the bidder on weekly basis and when and as required.

### **Enclosures**

The enclosure at each fixed CWQMS shall accommodate data logger, HMI, sensor cards, voltage regulator, transmitter unit etc. the enclosure shall provide protection from dust, humidity, precipitations, sunlight and environmental pollution. The material

for the enclosure shall be of steel plate or resistant plastic, of protection IP 65 with safety lock of good quality. The enclosure shall be customized for cable entry openings. The sensors shall be capable of working in river water, polluted (effluent/sewer etc) water.

## OVERVIEW AND SPECIFICATION FOR CENTRAL RECEIVING STATION

The Central Receiving Station will have three servers running Windows Server (latest edition) software will be established at the Chhattisgarh Environment Conservation Board (CECB), North Block Sector-19, Nava Raipur (C.G.) 492002.

The Central Receiving Station shall comprise of the following:

S.No	Particulars	Physical unit
1	Data collection and Data base server w/ most recent WINDOWS Server Edition, Virus/Firewall Software (Server 1)	One
2	Data Collection Software with SQL Database (Post Gre SQL, SQL Server, or similar) to be installed on Server 1	One
3	UPS for Computer Systems	One
4	Computer Server Rack	One
5	Network Router with Hardware with Firewall	One
6	Network Switch (HUB)	One
7	Color Laser Printer with 10 sets of high capacity toner cartridge	One
8	55" LED Monitor of reputed make such as Samsung, LG, Sony etc.	One

### Specification of Software for Central Receiving Station

The bidder will provide software to communicate between the Central Receiving Station and the remote stations. The bidder will provide a database management system. The bidder will provide time series analysis software for the quality control of posted water quality measurements.

#### Software Management:

- Software capable for requesting, downloading, editing, processing and representation and management of data.
- The software integrates the entire data request commands made to the stations in real time data or data saved in the memory.

#### Data Analysis

- Data enquiry over several days
- Daily statistics enquiry

- Strip charts of the daily statistics.

### **Visualization of Data**

- Enquiry of data in table form
- Enquiry of data in graph form

### **Communication and Data Presentation/Display**

- The controller should be interfaced with a GSM/GPRS communication modem to seamlessly transmit the data from remote place to a central location over a pre-defined interval.
- The communication to the system should be two way for ability to view settings and make changes to the configuration over the air, as and when required.
- The system shall be able to transmit real; time water quality data to desired location via Sim based communication.
- Keep the provision for display of other monitoring result conducted by CECB and Environment friendly slogan.
- Control room should be set at Head Office, CECB, Atal Nagar, Nava Raipur for displaying data for all display sites.

### **Ward and Watch of the equipment at Site:**

- Ensuring that the sensors, controllers, display screen etc. safety and security of all the equipment shall be in the scope of the bidder.
- The Bidder shall have to deploy their own manpower along with mobile & whatsapp facility and there should be Technical manpower at site 24 x 7 for any requirements needed at site by the client.

### **Installation at Site:**

The instrumentation system shall be installed and mounted on as per the locations decided by the Board. Utmost care to be taken to have sound installation at site as the system shall be installed in flowing water with often medium to high flow at site.

### **Any Room/Civil and Related Activity**

In case of any civil construction like room, control room needed on the site. The same shall be in the scope of the Bidder and bid shall be inclusive of that by all means.

### **Commercial instruction to Bidders:**

Bidders to indicate what taxes shall be applicable that is GST or applicable tax on the system.

**Certifications /References:**

- Bidders shall submit the desired Documents to fulfill the eligibility conditions as mentioned in the Qualification Criteria.
- Department shall under no circumstances give any additional amount during the time period /tenure as mentioned in the tender document.
- In case the Bidders is found not adhering to the tender specs as mentioned in the tender the Department has the right to Blacklist the Bidder .This shall be important to ensure quality workmanship and quality product being provided to the Client.