STATE POLLUTION CONTROL BOARD – SIKKIM
FOREST & ENVIRONMENT DEPARTMENT
GOVERNMENT OF SIKKIM
DEORALI, GANGTOK – 737102

F. No. 1074/SPCB...287 Dated 11/4/22

NOTICE INVITING REQUEST FOR PROPOSAL

SPCB-Sikkim invites Request for Proposal (RFP) from reputed agencies/organization/firms having experience in the field of environmental monitoring for development, installation, operation and maintenance of a real time continuous river water quality monitoring system in accordance with such terms and conditions prescribed hereunder:

Time schedule of RFP:

Sl.No.	Particular	Date/Time (Proposed)
1.	Publication of Invitation of RFP	13/04/2022
2.	Last date for Tender document download	30/04/2022
2.	Pre-Bid Meeting at the office of Member Secretary, SPCB-Sikkim	02/05/2022
3.	Last date and time of submitting the technical and financial bid at SPCB-Sikkim, Deorali	09/05/2022
4.	Opening of Technical Bid	17/05/2022
5.	Opening of Financial Bid	17/05/2022

The application should be addressed to the Member Secretary, SPCB-Sikkim, Block C, Forest Secretariat, Deorali, Gangtok, Sikkim and sent by registered post or email to ***spcbsikkim@gmail.com***

Complete RPF document can be downloaded from the website: ***https://spcb.sikkim.gov.in***
Applicants are advised to check the website on a regular basis. Any subsequent notice/information regarding this tender shall be uploaded on the websites only.

(Dr. Gopal Pradhan)
Member Secretary,
State Pollution Control Board-Sikkim
Dr. Gopal Pradhan
Member Secretary
State Pollution Control Board
Forest Env. & W/L Mgmt. Deptt.
Govt. of Sikkim

REQUEST FOR PROPOSAL (RFP)

FOR ESTABLISHMENT OF REAL TIME RIVER WATER QUALITY MONITORING SYSTEM FOR TEESTA RIVER, SIKKIM

STATE POLLUTION CONTROL BOARD - SIKKIM
DEPARTMENT OF FOREST & ENVIRONMENT
GOVERNMENT OF SIKKIM
DEORALI, GANGTOK – 737102

1.0 INTRODUCTION:

The State of Sikkim as a whole represents the watershed of river Teesta sloping from the north to the South of the State. From its origin in North Sikkim and till its entry into the plains of North Bengal the river receives numerous tributaries all along its course. The banks of the Teesta and its tributaries have several towns, cities and urban areas including clusters of industrial units. The river basin has a number of operational and under-construction hydropower projects. SPCB Sikkim has the mandate to monitor the pollutants entering the river system, identify its sources and take steps to abate pollution of the river water. SPCB-Sikkim is regularly monitoring the water quality under National Water Monitoring Program (NWMP) on manual basis.

However, the Board now intends to make use of modern information technology tools including Artificial Intelligence (AI) and Internet of Things (IoT) to carry out real time monitoring of the river water quality by setting up an online continuous river water monitoring system to assess the water quality at designated locations. Installation of real time river water monitoring system will facilitate the authorities in taking policy decision and initiating prompt action for prevention of pollution, taking remedial measures and dissemination of information to the stakeholders.

2.0 REAL TIME RIVER WATER QUALITY MONITORING & DISPLAY SYSTEMS:

2.1 Salient features:

(i) The contractor is free to choose any type/ make of analysers including the indigenous equipment meeting the prerequisites. The unit should give calibration protocol, periodicity/ frequency of calibration and ± variation specified when matched with manually monitored results.

(ii) The systems installed or to be installed which may include sensors/ electrodes/ data communicating devices or other related devices, should have the certification of institutions like US-EPA, MCERTS and TUV, BIS/CSIR-NPL etc.

(iii) The system supplier will comply with testing/calibration protocol as per International Standards.

(iv) The analysers should have capability to generate digital output and communicate directly with the software for 100% data & information on health of the analysers (diagnostics).

(v) The data from installed location should seamlessly be transmitted to State Pollution Control Board Sikkim

(vi) Should have provision for Multi-server data transmission from each station without intermediate PC or server.

(vii) Should have provision to send system alarm to server in case any changes are made in configuration or calibration.

(viii) Should have provision to record all operation information in log file.

(ix) For each parameter there should be provision for independent analysis, validation, calibration & data transmission.

(x) Must have provision of a system memory (non-volatile) to record data for at-least one year of continuous operation.

(xi) Should have provision of field level data viewing and data retrieval, as and when required.

(xii) Software should support data export in ISO -7168 format.

(xiii) The system supplier as well as the contractor should ensure two-way communication between the analyser and the central software of State Pollution Control Board Sikkim.

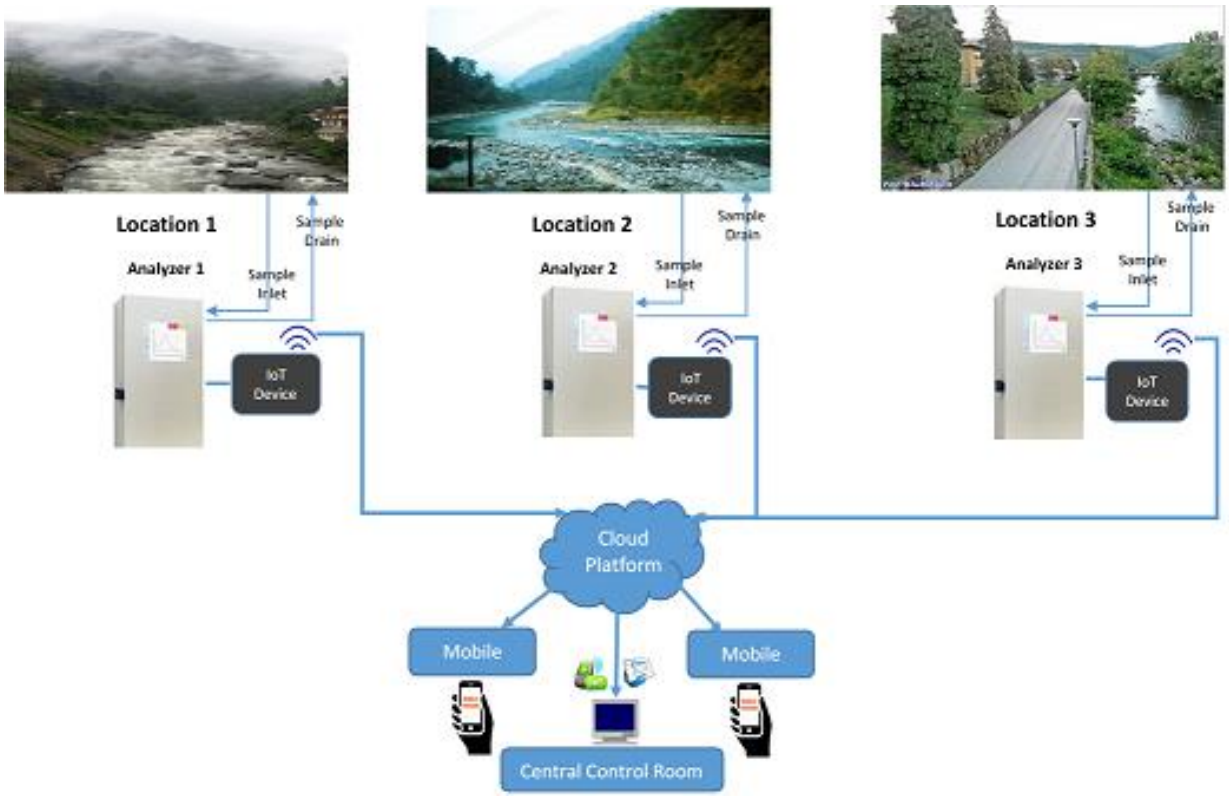
(xiv) The system supplier has to provide remote on-demand access to all the internal registers, configuration file and system diagnostics for protocol integration with the supplied software.

(xv) The supplied software should be capable and compatible with the existing central platform of State Pollution Control Board Sikkim.

(xvi) In case a PTZ camera is installed, the same should be available for viewing and controlling without having to download and install any kind of plug-in whatsoever and without having to visit any third party website.

(xvii) The system should have provision to connect at least four additional analysers as and when required.

3.0 Architecture:



The image above is provided for reference purpose only. The system integrator is advised to visit the site and collect necessary information as required for execution of the contract.

4.0 TECHNICAL SPECIFICATIONS:

4.1 Analyzers for Real Time Monitoring of River Water Quality:

Real time river water monitoring system equipped with remote monitoring using innovative technologies viz. Internet of Things (IoT) & Artificial Intelligence (AI) and facilitates transmission of data to Command Centre at SPCB-Sikkim Head office, Deorali. Automated warning SMS alert has to be sent to the Command Centre when the acquired value exceeds the threshold value. The system using different sensors can collected various parameters from river water such as pH, DO, turbidity, conductivity, and temperature, BOD, COD, Dissolved Ammonia and Chlorides and provide real-time data acquisition, transmission and processing.

Installation of real-time analyzers (Station) at upstream of the Mining-Mamring Bridge on Teesta River near M/s Shangrilla Pharma unit at the first instance and another station on Rangit River between Jorethang and Melli, South Sikkim to monitor the following parameters, viz. Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), pH, temperature, turbidity, conductivity, Dissolved Ammonia, nitrates and chlorides. Apart from these analyzers, an auto sampler is also to be provided for collection of samples in case of abnormal / high readings or as per need as decided by the SPCB-Sikkim. The analyzer to be supplied can be either extractive type or in-situ type. Few generic analyzer specifications are as given below:

4.1.1 DO Analyzer

Technical Specifications

Measuring Principle	:Optical
Application	:River Water
Safety	:Explosion Proof or Intrinsically Safe
Range	:0 to 20.0 ppm, 0 to 20.0 mg/L
Accuracy	:± 0.5% or better
Repeatability	:±0.5% of span
Sensitivity	:±0.5% of span
Pressure Limit	:4 - 6 bar
Temperature Indication	:Inbuilt
Calibration Method	: Air Calibration: One point, 100% water saturated air; Sample Calibration: Comparison to standard instrument, or comparison to Winkler Titration method
Cleaning	:Air Blast Unit. Probe should be able to function with cleaning unit attached to it

Mounting

a.) Sensor : Inside aeration basin at each grid

b.) Transmitter / Controller: Wall, Panel, Pole

Transmitter / Controller Type	:	Microprocessor Based
Diagnostic	:	Inbuilt
Display	:	LCD with LED backlighting
Power Supply	:	230 V AC ± 10%, 50 Hz
Analog Output	:	Isolated 4 – 20mA

Relay Contacts	:	Minimum of 2 SPDT contacts
Operating Temperature	:	0 to 50°C
Communication Protocol	:	Open Protocol like MODBUS, PROFIBUS, etc.
Sensor Cable	:	Integral to sensor
Cable Length	:	As per site requirement

4.1.2 pH Analyzer

Technical Specifications

Measuring Principle	:	Combination / Differential Electrode
Application	:	River Water
Safety	:	Explosion Proof or Intrinsically Safe
Range	:	0 - 12 pH
Accuracy	:	±0.02 pH or better
Repeatability	:	±0.05 pH
Sensitivity	:	±0.01 pH
Pressure Limit	:	4 - 6 bar
Flow Rate	:	Maximum 3m per second
Temperature Indication	:	Inbuilt
Temperature Compensation	:	Inbuilt automatic temperature compensation
Temperature Accuracy	:	±0.5 °C
Calibration Method	:	Two point automatic, one point automatic, two point manual, one point manual
Mounting		
a.) Sensor	:	Inside pipe / channel / tank
b.) Transmitter / Controller	:	Wall, Panel, Pole
Transmitter / Controller Type	:	Microprocessor Based
Diagnostic	:	Inbuilt
Display	:	LCD with LED backlighting
Power Supply	:	230 V AC ± 10%, 50 Hz
Analog Output	:	Isolated 4 – 20mA
Relay Contacts	:	Minimum of 2 SPDT contacts
Operating Temperature	:	0 to 50°C
Communication Protocol	:	Open Protocol like MODBUS, PROFIBUS, etc.
Sensor Cable	:	Integral to sensor
Cable Length	:	As per site requirement

4.1.3 BOD Analyzer

Technical Specifications

Measuring Principle	:	UV Absorption
Application	:	River Water
Safety	:	Explosion Proof or Intrinsically Safe
Range	:	0 – 50 mg/l
Accuracy	:	± 5% or better
Compensation	:	550 nm
Sample pH	:	4.5 to 9 pH
Pressure Limit	:	0.5 bar

Cleaning	:	Automatic
Mounting		
a.) Sensor	:	Inside pipe / channel / tank
b.) Transmitter / Controller	:	Wall, Panel, Pole
Transmitter / Controller Type	:	Microprocessor Based
Diagnostic	:	Inbuilt
Display	:	LCD with LED backlighting
Power Supply	:	230 V AC ± 10%, 50 Hz
Analog Output	:	Isolated 4 – 20mA
Relay Contacts	:	Minimum of 2 SPDT contacts
Operating Temperature	:	0 to 50°C
Communication Protocol	:	Open Protocol like MODBUS, PROFIBUS, etc.
Sensor Cable	:	Integral to sensor
Cable Length	:	As per site requirement

Ingress Protection (IP) Rating: The minimum IP rating required for probe type analysers should be IP68 and that of extractive type should be IP65.

4.1.3 Portable Auto Sampler

Technical Specifications

Application	:	River Monitoring
Minimum no. of Bottles	:	24
Individual Bottle Capacity	:	1 Litre PE
Sample Collection Technique	:	Peristaltic pump
Power Supply	:	24 VDC with power adaptor suitable for operation with 230 VAC ± 10%, 50 Hz
Inputs	:	Analog 0/4-20 mA, Digital, SDI
Operating Temperature	:	0 to 50°C
Display	:	Backlit graphic display

4.2 Specifications for Data Transmission Device for Analyzers and Display Board

Sl No.	Item Description.	Specifications
1.	Processor	Intel® Atom™ Processor E3815 (1.46 GHz Single Core, 512 KB Cache, 5W TDP) or equivalent Or 900 MHz or higher quad-core ARM Cortex-A7.
2.	Memory	Memory slots for MicroSD or full size SD card slot with Memory support of at-least 8 GB
3.	Ports	a. One HDMI b. LAN Port for Ethernet Network Connection c. Minimum of 3 USB Port with support for USB2.0 or USB 3.0.
4.	OS Support	Linux or Windows OS
5.	Communication Options	a. LAN Communication b. Wifi Communication – Wifi Hotspot enabled/ GPRS Comm. Enabled

Sl No.	Item Description.	Specifications
6.	Power Supply	5 to 12 V DC through 220 V 50Hz AC Supply adapter or USB driven.
7.	Size	Mechanical Chassis Size not to exceed 9'' x 6''x 6'' with standalone tower/box.
8.	Operating Environment	Operating Temperature 0° C to +50° C Humidity upto 90%
9.	Device Support	05 Years
10.	Antivirus	It should be secured. If Windows then life time antivirus should be there.
11.	General	Supplier will configure and deploy the communication mechanism. Complete manual of the device should be provided.
12.	Internet	To be provided by the vendor either through GSM SIM or through Wi-Fi Enabled Dongles.

4.4 Specifications of Software:

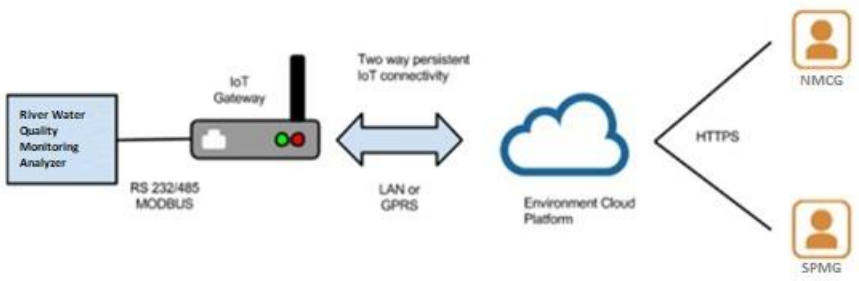
The Software should have a web application to view, generate default reports, analyze the collected data, generate custom reports and corroborate the transmitted data (which includes but is not limited to captured data, various exceedance, failures, etc.) from the instruments installed at various locations.

The web application should be supported on major browsers like FireFox, Chrome, Safari, Internet Explorer 11.

The user interface should be responsive and support rendering on tablets, smartphones and desktops, etc.

4.4.1 Architecture:

I. Data Transfer



II. Capabilities:

A. General

i. The most fundamental requirement in establishing continuous online monitoring systems is to have a universal format of connectivity that can accept real time data from **any installed analyzers (make or model)** installed at the specified locations. The contractor should be able to choose any analyzer make and model that is

approved internationally or by the Pollution Control Board for monitoring the River Water Quality.

ii. The system should support sending data directly from the analyser to the servers / cloud platform provided by State Pollution Control Board Sikkim.

iii. During collection and transmission, the platform should utilize digital encrypted communication to ensure authentic data is received and data origination location (GPS coordinates) and source signature are also verified by the software.

iv. The client software should be able to transmit the data to server using minimal bandwidth using existing site Broadband LAN/GPRS/GSM connectivity or by using an external dongle as an alternative for establishing online connectivity.

v. The software should provide reporting capabilities to display trend graphs, configurable alerts, tabular data, charts and data validation interface.

vi. The software and hardware should provide two-way communication (from the analyser to the cloud platform and vice-versa) and have the ability to capture and display internal registers / protocols, configuration file, analyser health & diagnostics of the field instruments in real time as well as on-demand.

vii. Wherever required, the software application should have inbuilt ability to view the IP Camera without any kind of browser plug-in or Desktop software

viii. The software should be able to control the IP camera and use the PAN, TILT and ZOOM functionality without any kind of plug-in.

ix. The software should provide the ability to annotate the validated data with State Pollution Control Board Sikkim comments and data quality codes. The annotations should be visible while viewing the data in the charts.

x. The software also should provide ability to develop custom made on-demand reports with capabilities to export the data into PDF, CSV and Excel formats. The reports developed should be printable on any of the standard printers.

xi. The data collection and transmission module should directly connect to the installed analyzer and fetch the data directly from the analyzer without any intermediary software or conversions and without any PC or server. The software should have no editing provision for altering / correcting the data at the field location(s).

xii. No data shall be accepted as an output from OPC of Server or DCS or any other intermediate software.

xiii. The data collection and transmission module should encrypt the data with unique client specific encryption key to ensure authentic data transfer from the sensor location to the State Pollution Control Board Sikkim server.

xiv. During internet connectivity failure or a communication issue with the State Pollution Control Board Sikkim server / cloud platform, the data collection and transmission module should store the encrypted data locally and retransmit when the transmission can be restored. Any such delayed transmission should be identifiable at the State Pollution Control Board Sikkim side using data quality codes.

xv. The data collection and transmission module should wait for acknowledgement from the server and should retransmit the data if no acknowledgement is received within the timeout period.

xvi. The data collection and transmission module should accept remote analyzer configuration commands and update the analyzer configurations with the set value.

xvii. Each measurement should be associated with the data quality code inferred while data is collected and the data quality code should be transmitted along with the data. The data quality code should indicate analyzer failures, analyzer communication failures etc.

xviii. Software should support reading analyzer configuration and report the configuration changes to the State Pollution Control Board Sikkim server. Any configuration changes done at the site should have audit trail and reported to the regulator for approval in the form of workflow.

xix. The data collection and transmission module should be able to collect the data directly from the analyzer with a minimum scan interval of 10 seconds.

xx. Data collection and transmission shall be minimum 15 min or other mean average period selectable by user as well as by the State Pollution Control Board Sikkim.

xxi. The data collection and acquisition software should be able to collect and encrypt the data locally on the location.

xxii. The data collection and transmission module should communicate the status periodically to the State Pollution Control Board Sikkim server even when no analyzer is connected or when analyzer is faulty with appropriate data quality code.

xxiii. The data collection and transmission module should auto-restart on failure or when machine reboots.

xxiv. The data collection and transmission module should be able to transmit the data over Broadband/LAN/Wi-Fi/GPRS/GSM etc.

xxv. The data collection and transmission module should support any analyzer, make and model based on the configuration and protocol specific extensions (analyzer suppliers should be open enough to share their analyzer protocols / internal registers for easy data transmission digitally).

xxvi. The data collection and transmission module should be customizable to support any specific protocol required.

xxvii. The data storage should be available for 10 years for data collected from all the locations with minimum of 1-minute interval.

xxviii. The software should have pre-configured threshold limits as specified by State Pollution Control Board Sikkim for the various parameters being monitored.

xxix. The software should generate automated alarms and alerts based on parameter exceedance, data connectivity failure, analyzer failures, etc.

xxx. The software should be able to identify delayed data published from the location due to network connectivity failures and mark those data separately from the live connected data.

xxxi. The software should be able to send pre-configured template based SMS and Emails for alerts and alarms generated based on the configured rules. This feature should be a built-in capability of the software and not external application software.

xxxii. The software should be able to generate report on alarms / events and exceedance with location wise consolidation and period wise say weekly, monthly, annually etc.

xxxiii. The software should provide automatic notification to the State Pollution Control Board Sikkim inbox for all new notifications and action items like fixing communication issues, analyzer problems etc.

xxxiv. The Software should support data export in ISO -7168 format.

xxxv. Should have inbuilt facility to connect the data to display board(s) as and when required.

B. Web-Server Interface Requirement :(Apache httpd, nginx)

a). General Requirements:

i. To view, generate default report, analyze the collected data and corroborate with other monitoring locations for various exceedance and failures.
ii. The Web Server Interface Module should provide a User Interface presented in the browser should be very user friendly and intuitive following the best practices in web based user interface design.
iii. The User Interface should be supported on major browsers like FireFox, Chrome, Safari etc. The user interface should support rendering on a Tablet, smart phones which supports these browsers.

b) Configuration Management

i. The Web Server Interface module should have list of supported analyzers make and model for the major analyzers used in the locations.
ii. The Web Server Interface module should support grouping of locations being monitored across geographic dimensions like District, City, etc. and other custom attributes selected by State Pollution Control Board Sikkim.

c) Alerts and Alarms

i. The Web Server Interface module should provide an interface to view and list all alarms and alerts. There should be a filter to view only new alerts and alarms.
ii. The Web Server Interface module should provide an interface to acknowledge the alarms and alerts.

d) Security

i. The Web Server Interface module should have facility for data viewable in non-editable format.
ii. All authorised departments / personnel should be able to view and generate default reports for the data generated for the location based on the access provided.
iii. The Web Server Interface module should support configurable user authentication levels to support different roles for location access.
iv. The Web Server Interface module should support creating and managing new users and their access levels.

e) Data Validation

i. The Web Server Interface module should provide user interface for data validation.
ii. The Web Server Interface module should provide ability to annotate the data with the specific events/comments provided by each location such as maintenance schedules, breakdown, analyzer fault etc.
iii. ISO 7168 Format should be supported.

f) Corroboration and Workflow

i. The software should support corroboration between the location and State Pollution Control Board Sikkim by providing a built-in workflow feature and an inbox feature. This feature should be a built-in functionality of the software and the web interface module and not additional software running separately to ensure that there is integration with the reporting module.
ii. Whenever there is any exceedance or analyzer failure or analyzer connectivity failure, an action item should be generated in the site inbox. The site personnel should be able to update with the corrective actions and comments. These comments/reasons should show upon the graphs when the data for that particular period is viewed.
iii. Site should be able to inform the regulator of different maintenance events (site maintenance, site breakdown, analyzer breakdown etc.) using workflow feature of the Web Interface Module.
iv. The system should automatically generate events and inbox messages based on the exceedance thresholds and alerts configured.
v. The system should provide the history of communication between the maintenance personnel and the State Pollution Control Board Sikkim personnel for specific events/workflows.
vi. The various events like communication failures, analyzer failures, exceedance etc. and corresponding reasons should be available for reporting. There should be standard reports for viewing location level statistics for communication failures, analyzer failures, power failure, exceedances etc.

g) Reports

i. The Web Server Interface module should support standard reports for each site based on the exceedance threshold, hourly average, and monthly average etc.
ii. The Web Server Interface module should have both default reports and also reports generated by the end user as per requirements.
iii. The Web Server Interface module should be able to support different data quality code and report data based on representativeness and data quality. Statistical significance of data should be reportable in respect to data density.
iv. The Web Server Interface module should generate report on approved and validated data. There should also be a capability to see the raw data collected from location within the reports.
v. The Web Server Interface module should have capability to compare, group the locations, analyzers and generate report (text, numeric and graphical).
vi. The Web Server Interface module should support ability to export the reports data to csv, pdf and text file as and when required.
vii. The Web Server Interface module should have provisions to accommodate printers of different model and make.
viii. The software should be able to select the data quality code, the data representativeness, the time window and the site specific parameters for generating reports.

ix. The Web Server Interface module should provide daily status of site and provide metrics on data quality and representativeness.

x. The Web Server Interface module should provide ability to generate custom reports.

xi. Report should be able to calculate differential data from two parameters reading and show the trend of differential data. This feature is required for temperature difference measurements and alerting.

xii. Should have feature to make calculations on raw data obtained from analyzer and generate alerts and reports.

xiii. The reports should have the capability to show both raw data and approved/validated data.

h) Live Status

i. The Web Server Interface module should support real time view of the data from the locations for all the parameters configured for monitoring.

ii. The Web Server Interface module should support geo-location of the analysers and Display boards using specific latitude - longitude or as per cartographic coordinates overlay on a map and present information of the location, parameters connected and present value either graphically or numerically.

iii. The software should be able to show the status of the sites in a geographic map and should show alerts and alarms based on system failures and parameter exceedance.

5. BILL OF QUANTITIES FOR ONE UNIT (ANOTHER TWO UNITS TO BE INSTALLED BASED ON PERFORMANCE OF THE FIRST UNIT):

Estimated cost of the project is as follows:

Sl. No.	**Item**	**Quantity**	**Amount per station (in Rs Lakhs)**
1	Analyzers for Real Time Monitoring of River Water Quality Monitoring as specified at sec 4.1	1 no.	16.00
2	Data Transmission Device for Analyzers and Display Board as specified at sec 4.2	1 no.	1.00
4	Client Software as specified at sec 4.4	1 no. (for all stations)	2.0
5.	Installation & commissioning of: a.) Analyzers for real time monitoring of river quality b.) Data connectivity and transmission (Internet connectivity not less than 2 Mbps & 24 x 7 Power back up)	1 lot	2.0
	Total		**21.0 lakhs**
6.	AMC for 5 years	Lumpsum	3.0lakh
	Grand Total	24.00lakh (Rupees Twenty four lakh only)	

6. SUBMISSIONS BY CONTRACTOR

6.1 General

The Contractor shall make submissions to State Pollution Control Board Sikkimof all design drawings and schedules relating to instrumentation and equipment and systems provided under this Contract. These submissions shall include, where relevant, the following:

6.2 Functional Design Specification

The Contractor shall submit a complete functional design specification (FDS) for approval by technical committee. This document shall serve as the primary mechanism by which the technical committee may confirm that the Contractor possesses an accurate understanding of the system and its requirements. The Contractor is encouraged to obtain clarifications to the specifications contained herein.

6.3 Drawings and Schedules

- General arrangement drawings of field-mounted instruments, LEDs, etc. showing installation details.
- General arrangement drawings of panels, fully-dimensioned in plan and elevation views, showing foundation and fixing details, access doors, clearances, cable-entry positions, weight and lifting arrangement.
- Instrument wiring diagrams.
- Interconnection wiring diagrams.
- Cable block diagrams, drawings and schedules.
- Comprehensive testing schedules for all off-site, on-site, pre-commissioning and commissioning tests and take-over tests.

All other drawings necessary for the provision of ducts, sampling, openings, trenches, fixing holes for panels and the like and for the complete understanding of the operation, maintenance and extension of the system including any required for the Purchaser to dismantle, repair, maintain, modify or extend the equipment during the O&M period.

6.4 Data and Calculations

- Manufacturer’s catalogues and data sheets
- Specification for protective coatings and painting

6.5 Certificates

- Manufacturer’s works tests
- Pre-installation checks
- Installed instrument performance tests
- System tests

6.6 Operation and Maintenance Instructions

- Composite manual describing the functional and operation of each piece of equipment.

- Composite manual for testing and servicing every system and individual item.

State Pollution Control Board Sikkim seeks proposals from experienced system integrators for **"**CONTINUOUS ONLINE REAL TIME RIVER WATER QUALITY MONITORING ANALYZER FOR MONITORING WATER QUALITY AT CRITICAL LOCATIONS IN TEESTA RIVER**"** under following terms and conditions.

7. OTHER TERMS AND CONDITIONS

i. The Contractor/System Integrators shall invest and set up Demo facility under Finance, Design, Built, Own, Operate and Transfer mode (FDBOOT) at a designated site for real time river water monitoring system equipped with remote monitoring facilitated by Internet of Things (IoT) and Artificial Intelligence (AI) and facilitate transmission of data to Command Centre at SPCB-Sikkim Head office, Deorali.

ii. The Contractor shall demonstrate the capability and efficacy and accuracy of the technology used in the real time monitoring system by operating & maintaining the system for atleast one year duration.

iii. The contractor shall install, at their cost, one station as Demo facility at a point at upstream of the Mining-Mamring Bridge on Teesta River near M/s Shangrilla Pharma unit to be selected by the SPCB – Sikkim, subject to procurement of the same as part of the accepted tender if found satisfactory or rejection without any payment liability for the SPCB if it is not found satisfactory. If not found satisfactory the tender itself will be summarily rejected without any liability, financial or otherwise, for the SPCB Sikkim. Further, the supply shall be covered by a two-year warranty against mechanical/electrical/electronic defects with free replacement of parts/machinery/system to bring it up to the original state during this period. The successful bidder shall enter into an agreement with the SPCB Sikkim to this extent and including other aspects.

iv. In order to ensure continuous operation of the station without problem, the contractor shall provide one technical person for the upkeep and operation of the station.

v. The Technical committee constituted by the board shall supervise the functioning of the system and verify the performance of the system.

vi. On successful demonstration of the technology provided for the said purpose by the contractor, the system will be acquired by the board and capital cost incurred shall be reimbursed by the board.

vii. The contractor shall provide training to the officials & staff of the Board for operation and maintenance of the system.

viii. **Parameter validation**

Each parameter is validated with reference to standard laboratory analysis and known standards. The sample shall be collected and sent to one or more accredited lab for analysis during and the process is repeated considering the prevailing meteorological conditions and seasonal variation which must fulfill the following criteria within six (06) months of the commencement of the operation.

ix. **Parameter Accuracy: Allowed Variability**

The relative difference between online and laboratory measurements has to be between

a) COD Accuracy ± 10%

b) BOD Accuracy ±10%.
c) pH Accuracy ±0.2 pH
d) TSS Accuracy +/- 10 %

8. OTHER IMPORTANT INFORMATION RELATED TO BID

This section provides important deadlines and associated activities, such as Bid Security information,Implementation cum Performance Guarantee, Warranty Period.

Sl. No.	Item	Description
1.	Bid Security (EMD)	Bid Security (EMD): Rs. 1.5 lakhs/- (One lakh Fifty thousand rupees only) Note: EMD shall be submitted in the form of DD / Banker Cheque/BG from Nationalized Bank / Schedule Bank having a Branch in Gangtok or can be transferred online through RTGS / NEFT transaction. The DD / Banker Cheque / BG needs to be enclosed with the Pre-Qualification cum Technical Bid. In case of online payment of EMD, the receipt for the EMD paid needs to be enclosed with the Pre-Qualification cum Technical bid. In the absence of DD / Banker Cheque / BG / Online Payment Receipt the bid will be rejected.
2.	Bid Validity Period	180 days from the date of opening of bid.
3.	Bid Security Validity Period	Validity period for DD/Banker cheque: 2 Months OR Validity period for Bank Guarantee: 6 months beyond final acceptance of completion of work
4.	Project Period	Delivery, Installation & Commissioning: 8 weeks Maintenance: 5 years from the date of acceptance
5.	Implementation cum Performance Bank Guarantee Value (in Rupees.)	10% of the Project Value
6.	Implementation cum Performance Bank Guarantee validity period	6 months beyond final acceptance of completion of work.
7.	Period for submission of Implementation cum Performance Bank Guarantee	Within 10 days of receipt of letter of Notification of Award (NoA).
8.	Period for signing contract	Within 7 days from the date of receipt of letter of Notification of Award.

9.	Penalty for delay in implementation	Please refer penalty clause.
10.	Address for correspondence in respect of Technical clarifications	State Pollution Control Board Sikkim, Forest Secretariat, C Block, Deorali, Gangtok - 737102, East Sikkim, India spcbsikkim@gmail.com
11.	Conditional bids	Not acceptable and liable for rejection and also liable for forfeiture of the EMD.
12.	Bid Document Price Receipt	Needs to be enclosed with technical bid failing which the bid will be rejected.

Please furnish your bid for supply of "Continuous Online Real Time River Water Quality Monitoring Analyzer for Monitoring Water Quality at Critical Locations in Teesta River and its tributaries" as per the pre-qualification, technical and financial bid specifications mentioned in the RFP on or before theBid Closing Date and Time mentioned in the time schedule under critical information. The bids should be addressed to the Member Secretary, State Pollution Control Board Sikkim. If rates quoted are for indigenous item, it should be in Indian Rupees and indicating GST, delivery charges, etc. If the rates quoted are for imported items, the price should be quoted in foreign currency which will include freight, forwarding charges, insurance excluding custom duty, etc. The warranty period offered by you and the delivery period required by you to supply the item should be clearly mentioned in the technical bid document.

9. SHORT LISTING CRITERIA:

a. State Pollution Control Board Sikkim will shortlist service providers who meet the Technical Qualification criteria mentioned in this RFP.

b. Any attempt by a Service provider to influence the bid evaluation Process may result in the rejection of its proposal.

c. State Pollution Control Board Sikkimwill constitute a Technical committee and a Bid Evaluation Committee to short-list the service providers according the Technical Qualification criteria given in this document.

10. EVALUATION PROCESS:

a. The bids from interested service providers are invited through physical tendering process.

b. The evaluation will be done using 2 stage bid process. The 1st stage will be Pre-Qualification cum Technical Qualification (TQ) bid and 2nd stage will be Financial bid.

c. The service providers will be shortlisted based on the Qualification criteria mentioned in the RFP.

d. Those service providers scoring >75 marks in 1st stage will only be eligible for 2nd stage and only their commercial bids will be opened.

e. It is mandatory to demonstrate real time water quality monitoring instrument by installing it at the field location specified by State Pollution Control Board Sikkim for a continuous period of not less than 1 (one) week.

Note: State Pollution Control Board Sikkim will require the service providers to give Technical Presentation on their Technical solution during the 1st Stage. Venue, Date & time will be communicated to the service providers at a later date.

10.1 Evaluation Criteria

Technical Committee will evaluate the Proposals of the service providers as per the following criteria:

A.) Pre-Qualification Criteria

Sl. No.	Pre-Qualification Criteria Description	Supporting Documents to be submitted by the service providers
1.	**Legal Entity:** Service provider must have registered under companies Act, 1956 & also registered with the Service Tax authorities and must have completed 2 years of existence as on Bid calling date.	Service provider should submit the following: a) RoC. b) Copy of GST Registration.
2.	**Turnover** a. The Service Provider should have a minimum turnover of Rs. 50.00 crores per annum from supplying of instruments, IT based project with Software Application Development and Maintenance, Real Time Data Analysis Tools during any of the last 3 financial year 2017-18, 2018-19 and 2019-20 or Cumulative turn-over should be at least 70 Crores during the last 3 financial years. b. Service provider should have positive Net profit after tax during each of the last three financial years namely 2017-18, 2018-19 and 2019-20. **Note: Turnover in areas other than mentioned above shall not be considered for evaluation**	Service provider should submit any of the following: a) Copies of Certified audited Balance sheet / Profit & Loss statement of the company
3.	**Past Experience** The Service provider should have similar experience in Supply & Maintenance of real time water quality monitoring instruments, providing Client Software for Real Time Data Acquisition	Service provider should submit the following: a) Copies PO / Work orders. b) Copies of Installation and

	and Handling System in Central/State Government depts./agencies/PSUs. The service provider should have implemented at least 1 project worth Rs. 10 lakhs or above or two projects worth Rs. 5 lakhs or above for the supply of real time water quality monitoring instruments, client software. Copies of work orders claiming expertize in above areas (Work orders in the last 2 financial years i.e. 2018-19 and 2019-20) in support of claim.	commissioning certificates. c.) Copies of Performance Certificates
4.	The Bidder should be ISO 9001 certified for quality of development of data related software The Bidder should have ISO 27001 certified for Information Security Management The Bidder should be CMMi Level 3 certified or above It is desirable that the bidder has MCERTS certification	Copies of the Certificates to be enclosed
5.	**Manpower Deployment** The Service provider should have employed at least 20 IT and Service Professionals as on bid calling date. For this purpose, the term 'IT and Service Professional" means a person with a graduate degree or a higher qualification in Computer / IT / Mechanical / Electronics / Instrumentation from a recognized university employed by the company.	Service provider should submit the self-certification by the authorized signatory along with CVs of the professionals.
6.	**Blacklist** The Service provider should not be blacklisted by any Central/state Government, Ministry or Agency for breach of Contractual Conditions as on bid calling date. The service provider should also not be entangled in any legal disputes with any Govt. / PSU body.	Service provider should submit Self declaration that the service provider is not black listed and is not in any legal disputes as on the bid calling date. Self-Declaration Certificate to be enclosed in the bid duly signed by the authorized signatory on its company letter head.
7.	**Local Presence** The service provider should have a local office as on date of bidding. Note: If the service provider is not having Local presence, it has to open a local office within 15 days from issue of LoI and same must be communicated to State Pollution Control Board Sikkim for future correspondence. An undertaking in this regard should be submitted on the company letter head.	Service provider should submit self-certified office address.

8.	The service provider should have prior experience in System integration by capturing data from different sources, installation & commissioning of real time water quality monitoring instruments, integration of Display Boards, providing client software as well as working on highly scalable large-scale databases suited for storing time-series data.	Service provider should provide credentials such as Purchase Orders for handling large volume data and data security.
9.	The service provider should have experience in developing Mobile application development and should have deployed at least 6 Mobile Application in Playstore and/or IOS AppStore	Service provider should submit the details of the mobile application and proof of production usage at the time of calling the bid.

B.) Technical Qualification Criteria

Sr. No.	***Technical Parameter – Checklist***	***Max score***
I.	***Past Experience & Turnover***	25
1.	The bidders shall have similar experience in Supply & Maintenance of instruments, providing Client Software for Real Time Data Acquisition and Handling System in in at least '1' Central/State Government Depts./agency/ PSUs during the last 2 years. The overall cost for such a project should be Rs. 10 lakhs or above. >1 Projects (20 marks) 1 Projects (10 marks)	20
2.	Organization Strengths (Turnover, profitability for the last 3 years). >10 Crores and <15 Crores (3 Marks) >15 Crores (5 Marks)	5
II.	***Engagement Approach (bidder to elaborate)***	75
1.	Proposed Solution Design: (Max 20 marks) • Data Collection and Transmission Module • Security • Data Validation • Workflow • Data Analytics and Reports • Data Manipulation Detection Techniques Data Handling System Methodology (Max. 5 marks) Project Plan covering specific activities of Development, Testing, Training plan, Rollout and Deployment (Max. 5 marks)	30
2.	Software Feature and demonstrate Live Camera integration capability without Plug-in with PTZ Controls	5
3.	Live Demonstration of the capabilities of the real time water quality instrument and Client Software demonstrating the following features. •Installation and demonstration of real time water quality monitoring	25

	instrument by installing it at the field location specified by the department for a continuous period of not less than 1 (one) week. •Acceptance of multi-client-side software •Real Time Alerts and SMS •Demonstration of Delayed Data Handling •Demonstration of Analyzer Diagnostics Capture in Real Time •Demonstration of Pre-build Reports and Custom Reports •Demonstration of Security Features for different logins •Demonstration of the Integrated Workflow for departments involved • Ability to connect different make and models of the analyzers	
4.	Proposed Team Structure with Skill & Experience of the Team during & post implementation. Details of Team and size focusing on R&D and the progress during the last 1 year by the R&D Team •Team - Qualifications (25%) •Similar Relevant Experience as below :(75%) •Team Members Experience in installation & commissioning, communication with real time water quality monitoring analyzers and Protocols for integrating any analyzers (make and model) •Experience in Big Data applications and Large-Scale Data Handlings	5
5.	Provide advanced Analytics using Integration of tools like SAS, R on the platform as a single application on all the data available in the platform.	5
6.	Existing capability for Operations & Maintenance along with helpdesk setup and escalation mechanism	5
	Total (I +II)	100

11. SCOPE OF STATE POLLUTION CONTROL BOARD SIKKIM:

1. Identification of the location for installation of the analyzers and other necessary equipment.
2. Permission from concerned authorities for access / installation of the analyzers and necessary hardware.
3. Permission from concerned authorities to erect any structure required for housing the analyzers and it's accessories at the respective locations.

12.ADDITIONAL IMPORTANT INFORMATION

Issue of Tender Call Notice	13/4/2022
Last date for Tender document download	30/4/2022
Bid Document Price (Payment receipt needs to be enclosed with technical bid)	Rs 1000/-
EMD	Rs 1,50,000/-
Bid Closing Date and Time	30/04/2022
Technical Bid Opening date and time	17/05/2022 (morning)
Financial Bid opening date and time	17/05/2022 (afternoon)
Date for installation of analyzers and location	1/07/2022

Contact Person	Member Secretary
Email	spcbsikkim@gmail.com
Correspondence address	Block C, State Pollution Control Board-Sikkim, Forest Secretariat Complex, Deorali.
Validity period for Bank Guarantee	6 months beyond final acceptance of completion of work

1. Location details for installing the analyser: First unit at Teesta River near Mining area, Rangpo, Pakyong District, Sikkim (Two others at different location after successful demonstration of the first unit)