Training Manual
on
Water Quality Testing & Report Management (WQTRM) Software

MANUAL DEVELOPED BY:

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Printing Support :
Emergency Multi-Sector Project for Rohingya Crisis Response (EMCRP)

Coordinator:
Training Department of Public Health Engineering (DPHE), Mohakhali, Dhaka-1212

Publication Date :
February 2024

Design & Printing :
Emergency Multi-Sector Project for Rohingya Crisis Response (EMCRP)

Copywrite:
Department of public health engineering

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Foreword

Immediate provision of emergency services like water supply, sanitation, and health services in case of any disaster or emergency is a very challenging task. The Rohingya crisis in Cox's Bazar is no exception. Providing water supply, providing sanitation facilities, proper waste management, and promoting hygiene in the densely populated Rohingya camps is a huge challenge. Under the pressure of this huge population, Ukhia and Teknaf upazilas are facing a serious crisis in the quality of life along with the natural, socio-economic environment and overall development of Cox's Bazar district is being hindered. Therefore, considering the overall situation of Cox's Bazar district, with the financial support of the World Bank, the Directorate of Public Health Engineering is implementing the "Multi-Sector Rohingya Crisis Response" project in the entire Cox's Bazar district, including Ukhia and Teknaf Upazilas, which provide Rohingya camps and shelters. Under this project, the Department of Public Health Engineering is conducting multi-faceted activities including climate-resilient safe water supply, sanitation, sewage management and solid waste management, and promotion of .social and gender-based integrated hygiene

Nine training manuals have been formulated to increase the knowledge and skills of the officers, employees, and related parties of the Directorate of Public Health Engineering, Project Office, Consultant, Implementation and Management and Maintenance Institutions associated with the implementation of the project activities to achieve the desired goals through the proper management of the above activities. Skill Development Manual on " Water Quality .Testing & Report Management (WQTRM) System" is part of it

Through this manual, the trainees will learn the correct information about the various components and mechanisms of using solar energy. The training course is specifically aimed at .making learning interesting, interactive, and practical

Sincere thanks to the Hon'ble Chief Engineer, Department of Public Health Engineering, and Project Director, EMCRP for providing comprehensive and comprehensive guidance to the Training Division, DPHE in preparation of this manual. Md. Jahidul Hasan, short-term consultant, EMCRP and Md. Abdullah-Hil-Kafi, Assistant Engineer, Training Division, DPHE, has directly or indirectly contributed to the preparation of this training manual. I hope that this manual will not only be a single topic related to the EMCRP project but will contribute as a .complete guideline for DPHE's solar energy utilization work in the future

Ruksana Parvin
Executive Engineer
Training Division
Department of Public Health Engineering (DPHE)

Sequential

Since August 2017, a large part of the Rohingya population forcibly displaced from Myanmar has entered the coastal district of Cox's Bazar in Bangladesh, creating one of the world's largest displacement crises. About 1.1 million displaced Rohingya have settled in makeshift camps in Ukhia and Teknaf upazilas—almost three times the local population. The area has become very densely populated due to the shelter of the displaced Rohingya population. Besides, the infrastructure there is very weak, lack of availability of basic services, and prone .to a high risk of natural disasters, especially cyclones and floods

Analyzing the initial humanitarian assistance operations, the World Bank has coordinated its aid-intensive ongoing operations with long-term operations for the displaced Rohingya population. As part of this, the "Emergency Multi-Sector Project for Rohingya Crisis Response (EMCRP)" is currently being implemented by the Directorate of Public Health Engineering to provide safe water, sanitation, and hygiene facilities to the displaced Rohingya population. The main objective of this project is to provide safe water supply and sanitation services as .well as promote social and gender-integrated sanitation

To increase the knowledge and skills of the officials, consultants, implementers, and management and maintenance institutions at various levels of the Department of Public Health Engineering, related to the implementation and management of proper safe water supply, sanitation services, sanitation and sewage management, etc. Nine training manuals have been prepared on relevant subjects. I hope that these manuals will make a significant contribution .to improving the skills of all concerned

I express my gratitude to all the persons who contributed directly or indirectly by providing valuable feedback and suggestions for the preparation of the training manuals. I am grateful to the World Bank for providing grant-in-aid support to the Multi-Sector Project on Rohingya Crisis Mokobila on an urgent basis. Congratulations and thanks to all the colleagues the Executive Engineer, the Training Department, the short-term Consultant, EMCRP, and the Project Director of Public Health Engineering for their cooperation in finalizing and preparing these .manuals

Md. Sarwar Hossain
Chief Engineer
Department of Public Health Engineering (DPHE)

Acknowledgment

Since August 2017, Rohingyas have crossed the border into Bangladesh's Cox's Bazar district due to extreme violence in Myanmar's Rakhine State. The Bangladesh government provided them temporary shelter in Ukhia and Teknaf upazilas of Cox's Bazar district on humanitarian grounds. As a result of the location of this large number of displaced Rohingya people, the Rohingya camp area of Cox's Bazar has become the most densely populated area in the world, and meeting the basic needs of the population has become a big challenge. As a result, the development of Cox's Bazar district is hindered and the quality of life of the local people is threatened. To deal with this crisis, the "multi-sector project to deal with the Rohingya crisis on an emergency basis" is being implemented by the Department of Public Health Engineering on behalf of the Government of Bangladesh to assist with safe water supply, sanitation, and health development. The Directorate of Public Health Engineering EMCRP and the Training Department are working together to provide the necessary support to increase the skills of the concerned officers/employees under the department and various .workers under the scope of the project

As a part of this work, nine training manuals have been formulated on various relevant topics to increase the knowledge and skills of the officials, employees, office assistants, operators, and supervisors of the Department of Public Health Engineering, Project Office, Consultants, Implementation and Management and Maintenance Institutions associated with the implementation of EMCRP project activities. Skill Development Manual on " Water Quality Testing & Report Management (WQTRM) System " is part of it. This training manual includes a detailed discussion on the relevant topics, session planning, and various required materials (learning and reference materials/reading materials) considering the participants. I strongly believe that through the manual, the activities of Water Quality utilization under the project will .be more standardized and the project activities will be accelerated

I would like to express my gratitude to all those who contributed their valuable time, feedback, and suggestions including Ruksana Parvin, Executive Engineer, Training Division, DPHE, and Md. Jahidul Hasan, Short Term Consultant, EMCRP. I express my gratitude to Mr. Md. Sarwar Hossain, Honorable Chief Engineer, Department of Public Health Engineering, for his utmost cooperation in the preparation of the manual by providing overall guidance. I am grateful to the World Bank authorities for providing overall support in project management through principal and additional financing of the project. Also, special thanks to EMCRP Project Social Development Officer Mr. Md. Muktadir Harun, Deputy Project Director and Project Director's office consultants, training consultant Mr. Md. Shahidur Rahman, and related officials for their overall cooperation in finalizing the manual. I hope that through this training manual, those .involved in the said work will be properly informed and acquire the necessary skills

Mohammad Abdul Qayyum
Project Director (EMCRP)
Department of Public Health Engineering (DPHE)

TRAINING SCHEDULE

1st Day (8 Hours)

TIME	SEASON	TOPIC
09.00 - 09.30	Registration	
09.30 - 10.00	First session 30min	● Introduction and purpose of training ● Creation of learning environment.
10.10 - 10.30	Tea break 30min	
10.30 - 11.30	Second session 1hr 30 min	● Computer, Hardware, Software ● Computer Function, Computer System
11.30 - 12.30	Third session 1hr	● What is Water Quality Testing and Report Management (WQTRM) Software ● Current limitations of WQTRM Software: ● Outcome or benefit of the new system ● Main Features of the Proposed System
12.30 - 1.30	Fourth session 1hr	● Operational flow chart of (WQTRM) System ● What are Software Modules & Main Modules of WQTRM ● Technical features and system Architect of WQTRM Software
01.30 - 02.30	Food and prayer	
02.30 - 04.30	Fifth session 1.30hr	● Master data & Master Data entry ● User Management ● Role Management ● Address Management ● Responsibilities of System Administrator
04.30 - 05.00	Tea break	

First Day

First session

Describe the purpose of the training

Pre-training assessment

First session

1.1 Introductory episode:

- Describe the purpose of the training
- Pre-training assessment

1.2 Introductory Session Objectives: At the end of this session the participants will-

- Participants will get to know each other
- Get an idea about the objectives of the training
- A learning environment will be created
- Coordination between expectations and topics can be achieved

1.3 Duration: 30 Min

1.4 Training Materials: Whiteboard, whiteboard markers, multimedia screen, duster and manual.

1.5 Topics to be discussed:

1.5.1 Overall Objectives of Training: After this training, the participants will.

- Get an idea about Computers, Computer Hardware, Software, and Computer Systems.
- Get an idea about Water Quality Testing and Report Management (WQTRM)
- Software.Get an idea about the Present System and Proposed System.
- Get an idea about the Operational flow chart of (WQTRM) System.
- Can explain about Main Modules, Technical features, and system Architect of WQTRM Software.
- Responsibilities of Sub Assistant Engineer (SAE) and Executive (EE)
- Get an idea about the Master Data Entry System, Responsibilities of System Administrator
- Get an idea about the System (LIMS).
- Responsibilities of LAB Technician, Chemist, LAB In-Charge
- Get an idea about Discussion on the Dashboard, Reports Management System and Challenges.

1.5.2 Specific objectives of this training: At the end of this training the participants will –

- Can explain What is Computer, Computer Hardware, Software, Computer System?
- Can explain about Water Quality Testing and Report Management (WQTRM) Software.
- Can explain about the Present System and new System.
- Can tell about the Operational flow chart of (WQTRM) System.
- Can tell about Main Modules, Technical features, and system Architect of WQTRM Software.
- Can explain Master Data Entry System.
- Can explain about LAB Management system (LIMS).
- Can explain the dashboard, Reports Management System, and Challenges.

Second session

Computer, Hardware, Software Block Diagram, Computer Function and Computer System

Second session

2.1 Topic:

- Computer, Hardware, Software
- Block Diagram, Computer Function and Computer System

2.2 Objectives of the lesson: Participants at the end of this session -

- Can tell about Computer, Hardware, Software, Block Diagram and Computer Function, and Computer System

2.3 Duration: 1hr

2.4 Training Materials: Whiteboard, whiteboard marker, multimedia screen, duster, and manual

2.5 Procedures for Conducting Training

SUBJECT	ACTIVITIES
Name and purpose of discussion	● The name of the subject to be discussed must be presented in writing. ● What the participants want to learn from this discussion should be known through questions. ● Pre-written objectives should be presented and participants' expectations should be compared with them.
Discussion	● The topic should be presented through questions. ● Participants should be encouraged to participate in discussions. ● Care must be taken whether questions are presented systematically or not.
Summary of topics discussed	● At the end of the discussion, the entire subject should be discussed.
Assessment	● To assess how much the participants know the subject matter by presenting and answering questions.

2.6.1 Computer?

The computer is an advanced electronic device that

- takes raw data as input from the user
- processes these data under the control of a set of instructions (called a program)
- gives the result (output)
- and saves output for future use

A computer requires both hardware and software Hardware: All physical parts (that we can touch) of the computer are known as Hardware (Keyboard, Monitor, Mouse).

- Input Device: Mouse, Key Board
- Output Device: Monitor, Printer
- Storage Device: Hard Disk, Pen Drive

Software: Programs (program is a series of instructions), Software is a set of instructions, data, or programs used to operate computers and execute specific tasks. It is the opposite of hardware, which describes the physical aspects of a computer.

There are three basic types of software: Application programs, device drivers, and operating systems. Each type of software performs a completely different job, but all three work closely together to perform useful work.

Database: A database is a collection of data, typically stored in a computer system. A database is usually controlled by a database management system (DBMS).

2.6.2 Block Diagram of Computer Function-

A computer has four functions:

Input (Data): Input is the raw information entered into a computer from the input devices (Keyboard, Mouse). It is the collection of letters, Numbers, images, etc.

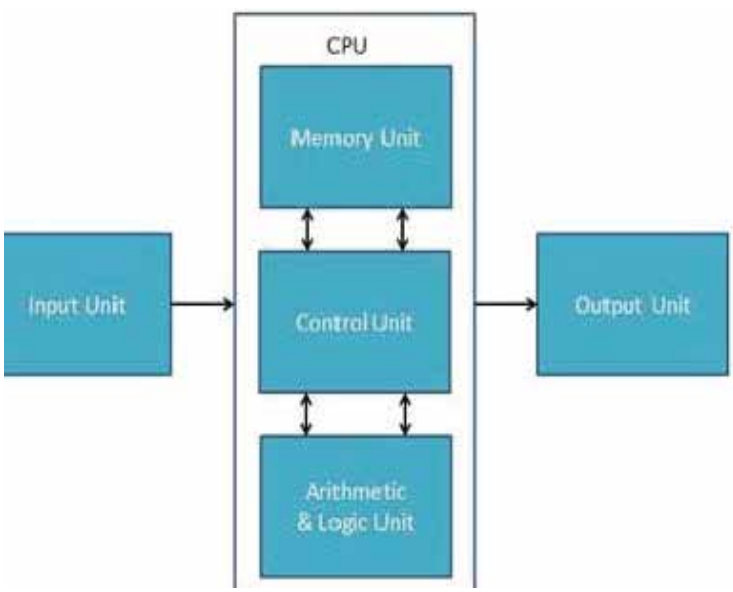
1. **Process:** Process is the operation of data as per given instruction in the CPU. It is an internal process of the computer system.
2. **Output:** Output is the processed data given by the output device (Printer, monitor) after data processing. Output is also called Result.
3. **Storage:** We can save these results in the storage devices (Hard disk, pen drive) for future use.

2.6.3 Computer/Computerized System:

All of the components of a computer system can be summarized with simple equations.

COMPUTER SYSTEM = USER + HARDWARE + SOFTWARE

- Hardware = Internal Devices + Peripheral Devices
- Software = Program
- USER = Person, who operates a computer



Picture: Block Diagram of Computer Function

Picture: Computer System

Third session

What is Water Quality Testing and Report Management (WQTRM) Software
Outcome or benefit of the new software
Main Features of the new software

Third session

3.1 Topic:

- What is Water Quality Testing and Report Management (WQTRM) Software
- Outcome or benefit of the new software
- Main Features of the new software

3.2 Objectives of the lesson: Participants at the end of this session -

- Can explain about Water Quality Testing and Report Management (WQTRM) Software
- Can explain about benefit of the new system
- Can Explain about new (WQTRM) Software
- Main Features of the new software

3.3 Duration: 1hr

3.4 Training Materials: Whiteboard, whiteboard marker, multimedia screen, duster, and manual.

3.5 Procedures for Conducting Training

SUBJECT	ACTIVITIES
Name and purpose of discussion	● The name of the subject to be discussed must be presented in writing. ● What the participants want to learn from this discussion should be known through questions. ● Pre-written objectives should be presented and participants' expectations should be compared with them.
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Summary of topics discussed	● At the end of the discussion, the entire subject should be discussed.
Assessment	● To assess how much the participants know the subject matter by presenting and answering questions.

3.6.1 What is WQTRM Software?

WQTRM Software is one of the application software which is Developed for water quality testing all over Bangladesh and this project is funded by the World Bank.
This system will store in the central database management system application data, financial data, and LAB data for future analysis.

The main goal of **(WQTRM) Software** is to transform a conventional manual water quality testing report into a modern integrated computerized system and provide a good quality LAB report to our valuable customers.

3.6.2 Current limitations of old WQTRM Software:

The water sample and water point are not linked
No tracking of the sample status
NO process of authentication/validation of water sample tracking
Desktop-based solution
Not integrated
No dynamic reports
No Dashboard

3.6.3 Outcome or benefit of the new software:

To store application data, financial data, and Lab data in a central server for future research and real-time reporting.
To digitalize the application process of water quality tests.
To Computerized payment management
To digitize sample collection, and diagnosis Reports
To collect water point location through mobile GPS and pictures
To provide SMS and email notifications
Report sending from any Lab to its higher-level office
Automated Real-time Reports management
Real-Time Dashboard
Automated Notifications

3.6.4 Main Features of the Proposed System

User friendly
Wave base solution
Power full MIS Dashboard
Different types of reports.
Integrated Solution
Central Database
Client-server, three-tier, and cloud-based use
High-quality user requirement-wise reports
Better interface

Fourth session

Operational flow chart of (WQTRM) software
What is Software Modules & Main Modules of WQTRM
Technical features and system Architect of WQTRM Software

Fourth Session

4.1 Topic:

- Operational flow chart of (WQTRM) software
- What is Software Modules & Main Modules of WQTRM
- Technical features and system Architect of WQTRM Software

3.2 Objectives of the lesson: Participants at the end of this session -

- Can explain about Water Quality Testing and Report Management (WQTRM) Software
- Can explain about Main Modules of WQTRM
- Can explain about technical features and system Architect of WQTRM Software

3.3 Duration: 1hr

3.4 Training Materials: Whiteboard, whiteboard marker, multimedia screen, duster, and manual.

3.5 Procedures for Conducting Training

SUBJECT	ACTIVITIES
Name and purpose of discussion	● The name of the subject to be discussed must be presented in writing. ● What the participants want to learn from this discussion should be known through questions. ● Pre-written objectives should be presented and participants' expectations should be compared with them.
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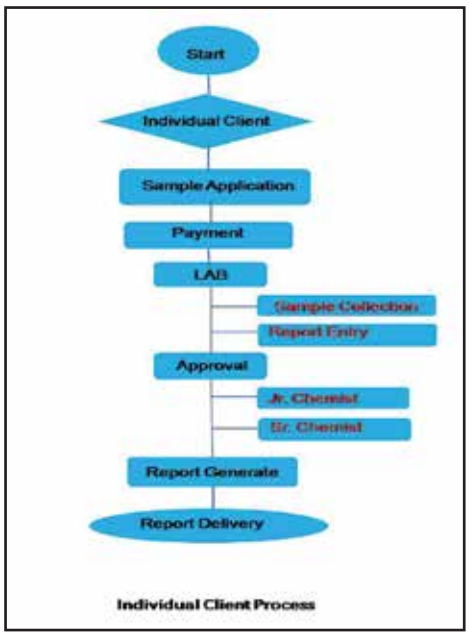
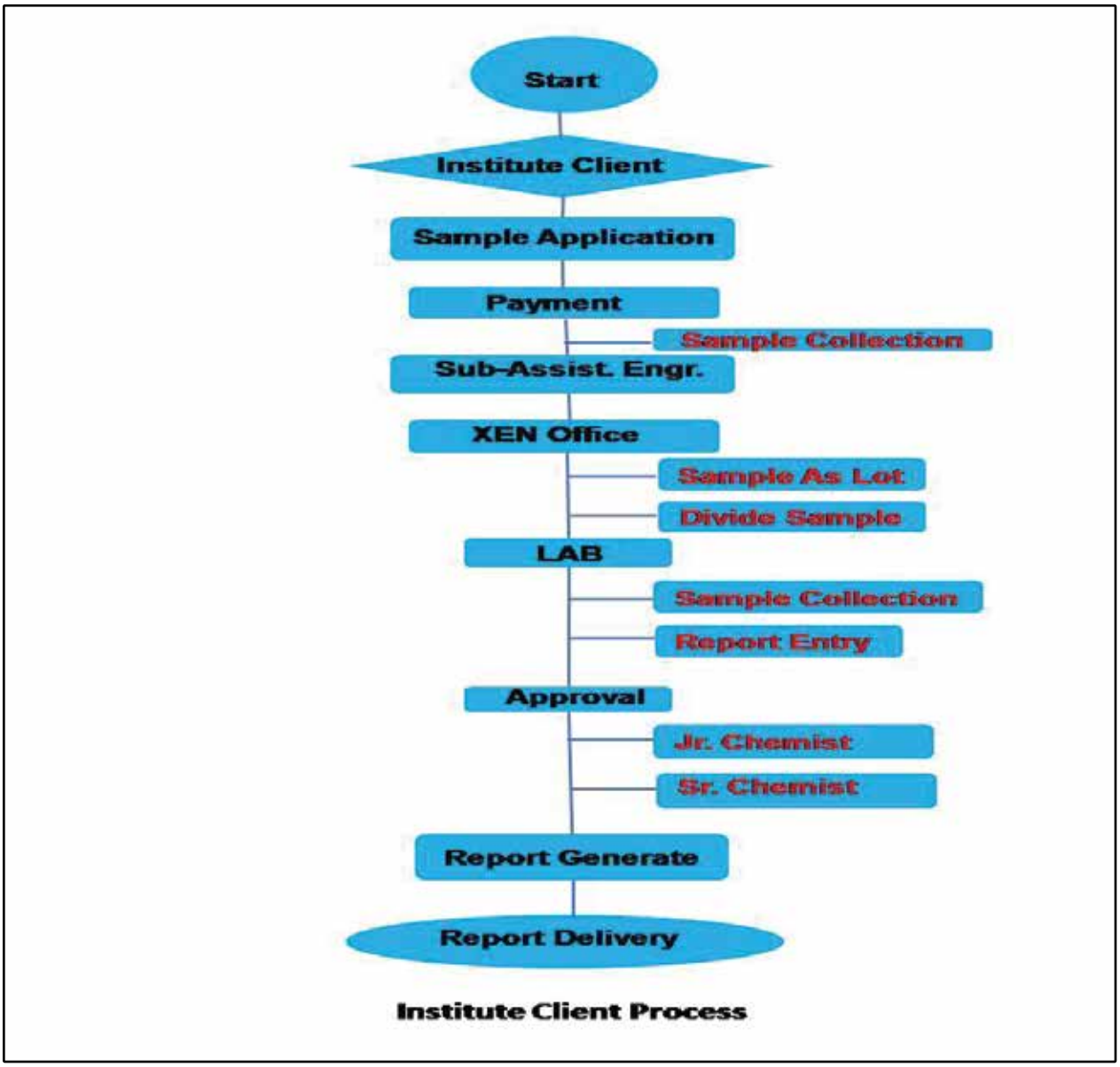
Summary of topics discussed	● At the end of the discussion, the entire subject should be discussed.
Assessment	● To assess how much the participants know the subject matter by presenting and answering questions.

4.6.1 Operational flow chart of WQTRM system

There are two types of clients- 1. Individual Clients. 2. Institutional Client.



Flow chart of Individual client



Institute Client Process

4.6.2 Software Modules?

In computer software, a module is a unit of program dedicated to a specific function.

WQTRM Software is a cost-effective, efficient software system to monitor water quality using software, hardware, and databases. It measures if water is safe to drink, fish from, swim in and if it complies with legal requirements. Water quality is measured by several factors, such as the concentration of dissolved oxygen, bacteria levels, the amount of salt (or salinity), or the amount of material suspended in the water (turbidity).

4.6.3 Technical Features of WQTRM Software

- WQTRM Software is fully scalable and adaptable to future needs, technological evolutions,
- and volumes of business
- WQTRM Software is Platform independent and should not be constrained to a single Hard
- ware Platform Operating System or database
- WQTRM Software is Developed using open-source technology
- Recommend the detailed infrastructure with specifications required for rolling out the
- solution in development, testing, staging, production, high
- It is using Developing tools like JAVA, .NET, and PHP for easy and simple integration for
- third-party external systems
- Integrating with SMS and payment getaway, availability of DC/DR technology

4.6.4 Main Software Modules of WQTRM Software

1. Master Data Entry Management-

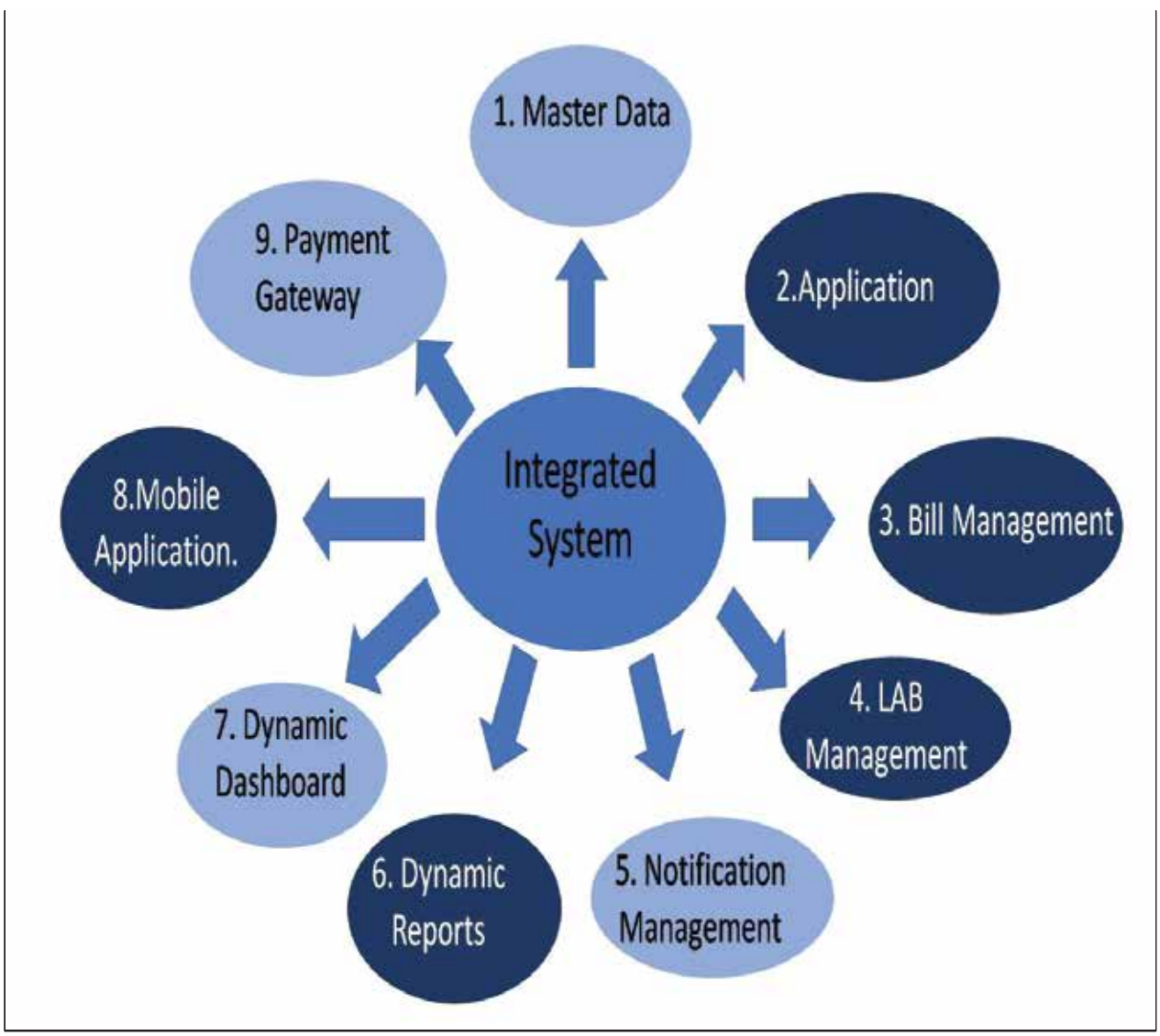
- User Management & Role Management
- Location Management
- Service Management and Rate Management

2. Transaction Entry Data

- Application Management
- Bill Management
- Lab Management
- Notification Management
- Payment Gateway Integration.
- Development of Mobile Base Application for Data Entry

3. Reports & Dashboard

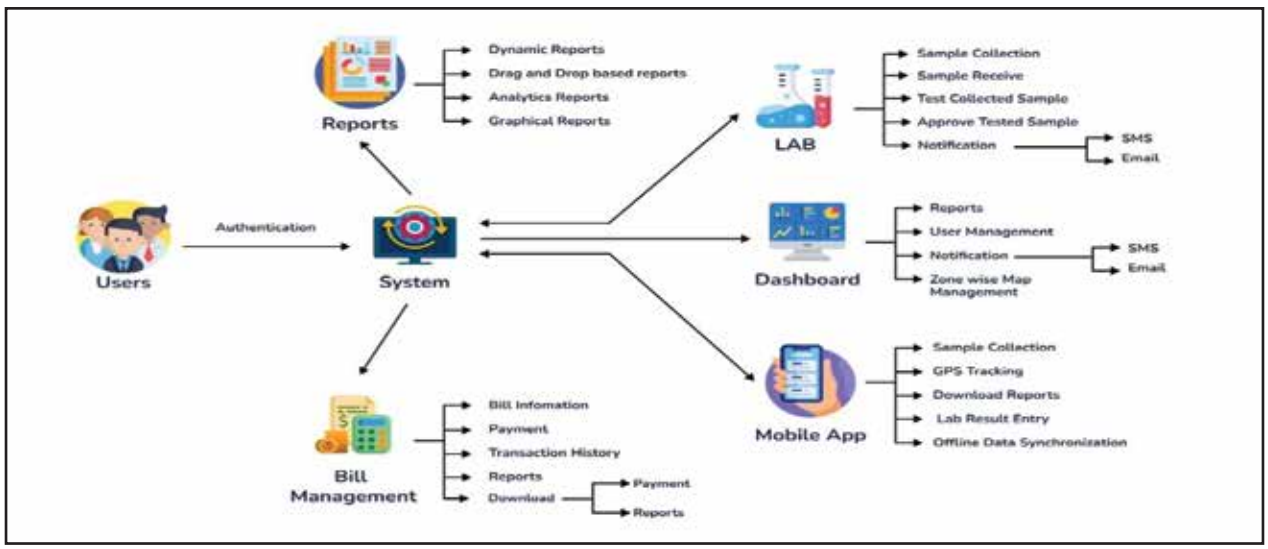
- Dynamic Report System
- Dynamic Dashboard.



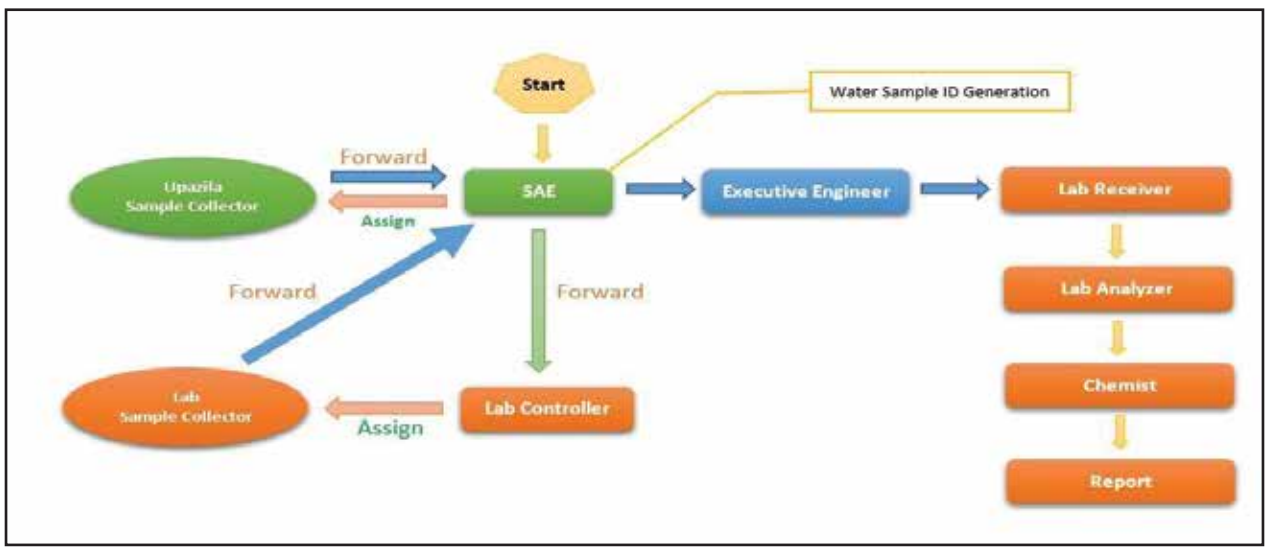
Main software modules

4.6.5 System Architect of WQTRM software:

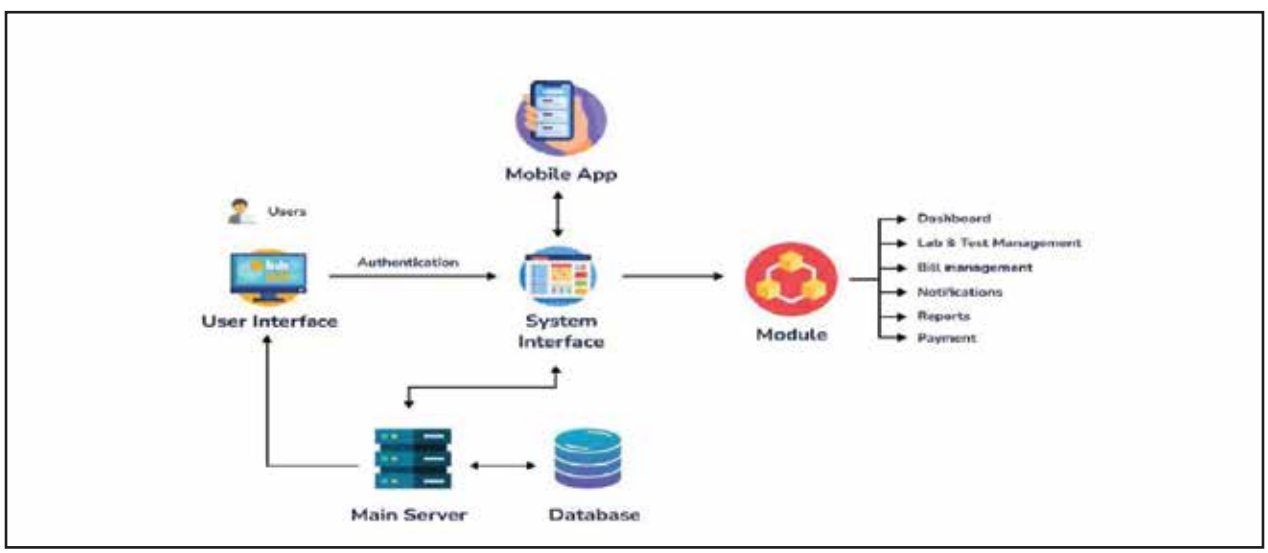
System architecture is, simply, the organization of a system. This organization includes all components, how they interact with each other, the environment in which they operate, and the principles used to design the software.



System Flow Chart-01



System Flow Chart-01



Fifth session

Master Data Entry System, User Management
Role Management, Address Management
Service Management and Rate Management
Responsibilities of System Administrator
Operation Manual of Management Admin

Fifth Season

5.1 Topic:

Master Data Entry System

- User Management
- Role Management
- Address Management
- Service Management and Rate Management
- Responsibilities of System Administrator
- Operation Manual of Management Admin

5.2 Objectives of the lesson: Participants at the end of this session -

- Can learn about Master Data Entry System
- User Management
- Role Management
- Address Management
- Service Management and Rate Management
- Can learn responsibilities of System Administrator & Management Admin

5.3 Duration: 1hr

5.4 Training Materials: Whiteboard, whiteboard marker, multimedia screen, duster, and manual.

5.5 Procedures for Conducting Training

SUBJECT	ACTIVITIES
Name and purpose of discussion	● The name of the subject to be discussed must be presented in writing. ● What the participants want to learn from this discussion should be known through questions. ● Pre-written objectives should be presented and participants' expectations should be compared with them.
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Summary of topics discussed	● At the end of the discussion, the entire subject should be discussed.
Assessment	● To assess how much the participants know the subject matter by presenting and answering questions.

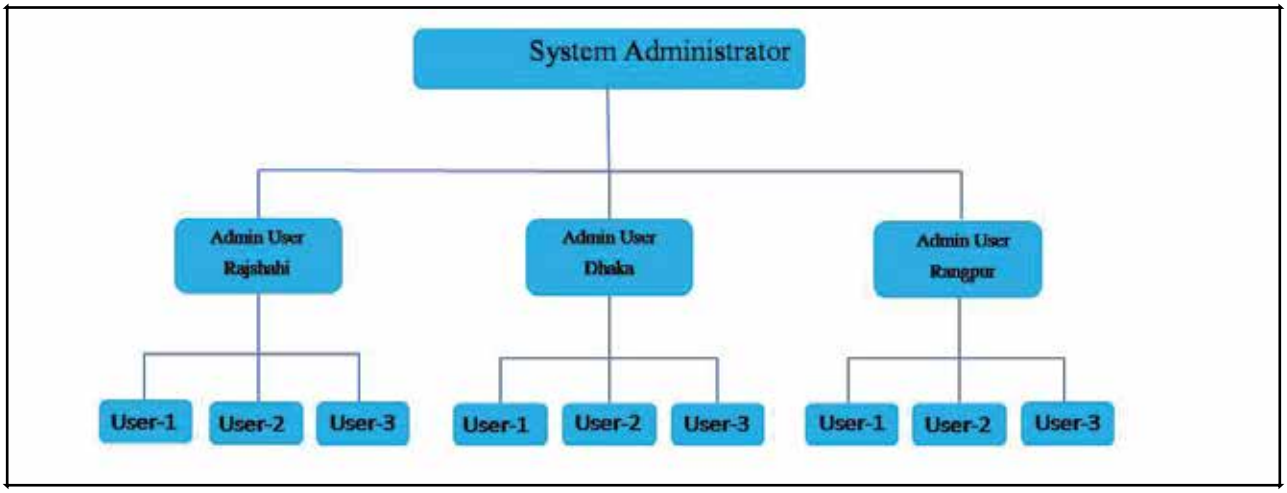
5.6.1 Master Data Entry System?

Master data is the core data that is essential for running the whole computerized system. It is data about key business entities that provide context for business transactions and operations. Data designated as master data can vary from organization to organization.

Master Data Management:

1. User Management
2. Role Management
3. Address Management
4. Service Management and Rate Management

1. User Management:
User management is a system to handles activities related to individuals' access to devices, software, and services. It focuses on managing permissions for access and actions as well as monitoring usage. Functions of user management include: Providing users with authenticated access.



These are three types of Users:

System administrator- all access to the system.
admin user- of the system to create/update/delete different types of user accounts like Admin, Accounts, Laboratory, and Top Management, etc. to access and perform different activities of the system.
General User- to enter data of application, billing, Laboratory, etc.

A robust user management system is required, which will enable the authorized admin user of the system to create/update/delete different types of user accounts like Admin, Accounts, Laboratory, and Top Management, etc. to access and perform different activities of the system.

2. What are the roles of a user?
A user role is a set of privileges that is assigned to a user or user group to allow the user or user group to perform certain tasks and manage certain sessions. To be assigned to a role, each user or group of users must have a valid user ID or group ID in the user registry on the management server.

3. Home addresses Definition: Define Home addresses. means the dwelling location at which an individual resides and includes the physical address, mailing address, street address, parcel ide.

4.What is service management? : Service Management is a customer-focused approach to delivering information technology. Service Management focuses on providing value to the customer and also on the customer relationship.

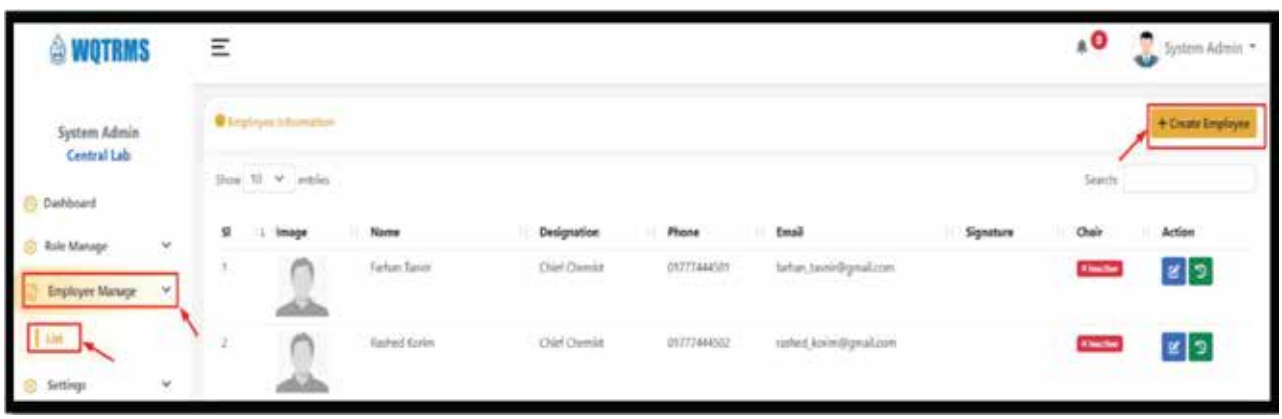
1. Operation Manual of System Admin

1. To access WQTRMS, use URL: https://wqtrms.dphe.gov.bd/login and enter User Name and Password.

2. In admin dashboard, can view 'Sample Collection this Year' with sinusoidal and pie chart representations and filter for a specific date range.

3. In the "Role Manage" section, can create a role by entering a role name, selecting permission name and guard name, and submitting the form.

4. In the "Employee Manage-List" section, can create and edit employee information by required data



5. In the "Settings-DPHE" section, can create and edit circles by required data

6. In the "Settings-Type of Water Point" section, can create and edit type of water point.

7. In the "Settings-Ownership Type" section, can create and edit the Ownership type.

8.In the "Settings-Area and Land Type" section, can create and edit Area and Land type.

9. In the "Settings-Water Source" section, can create and edit the Water Source.

10. In the "Settings-Sample Source" section, can create and edit the Sample Source.

11. In the "Settings-Sample Category" section, can create and edit the Sample Category.

12. In the "Settings-Bottle Type" section, can create and edit delete the Bottle Type.

13. In the "Settings-Latrine Type" section, he can create and edit Latrine Type.

14. In the "Settings-Latrine Platform Condition" section, can create and edit Latrine Platform Condition.

15. In "Settings-Install By" section, can create and edit the Install By.

16. In “Settings-Source Category" section, can create and edit Source Category.

17. To create a Source Category, enter required data and click "Create”.

18. In "Settings-Source Sub Category" section, can create and edit Source Sub Category.

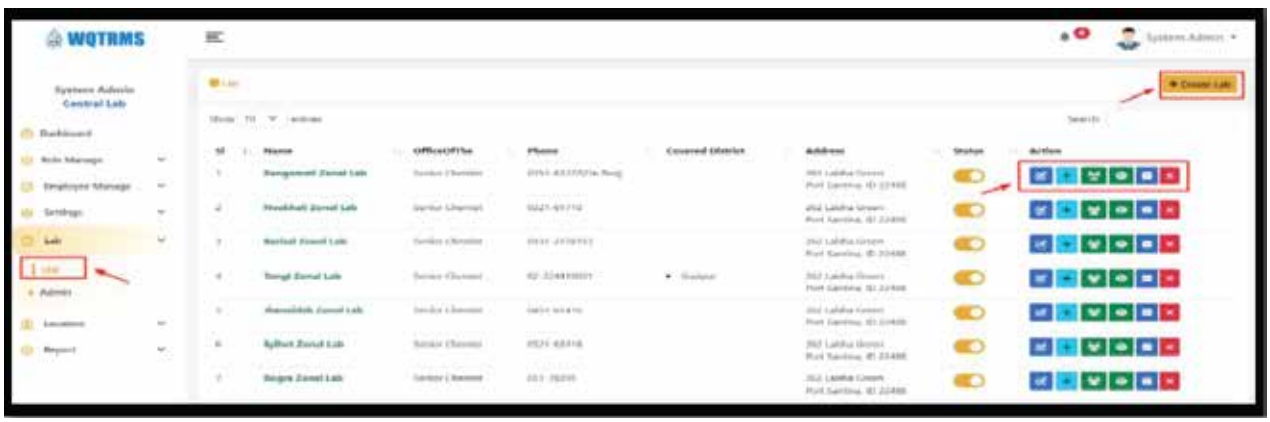
19. In "Settings-Preservative Used" section, can create and edit the Preservative Used.

20. In "Settings-Parameter" section, can create and edit Source Sub Category.

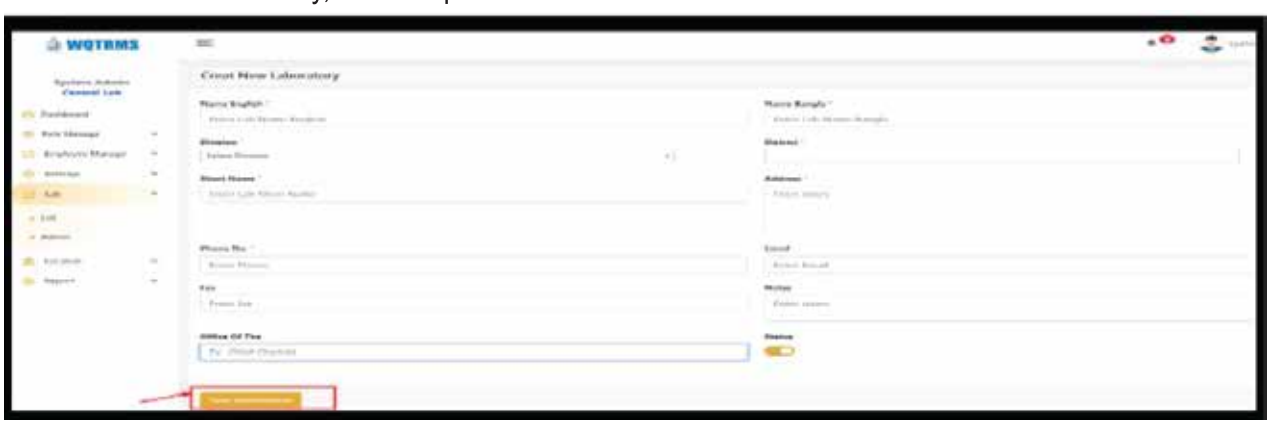
21. In "Settings-Procedure" section, can create and edit the Procedure.

22. In "Settings-Analysis Method" section, he can create and edit Analysis Method.

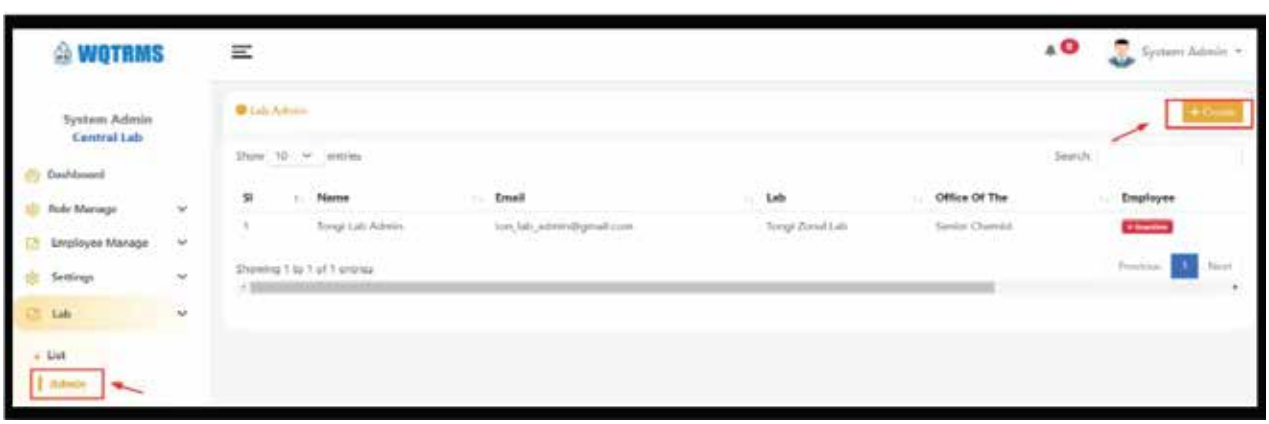
23. In Lab-List , can create new lab, edit lab information, view lab parameters, view lab users, view lab details, view chemist committee, remove lab.



24. To create a laboratory, enter required data and click "Save Information".

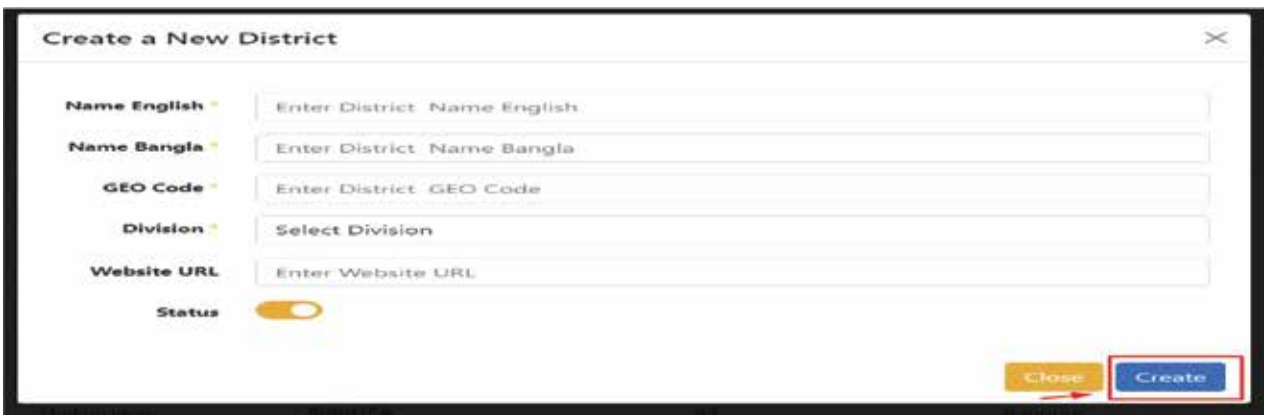


25. To create a Lab-Admin, enter required data and click "Create".



26. In Location-Division he can create new divisions, edit, remove divisions.

27. In Location-District he can create and edit new districts.



28. In Location-Upazila he can create new Upazila and edit Upazila.

29. In Location-Union he can create new union and edit union.

30. In Location-Ward he can create a new union and edit ward.

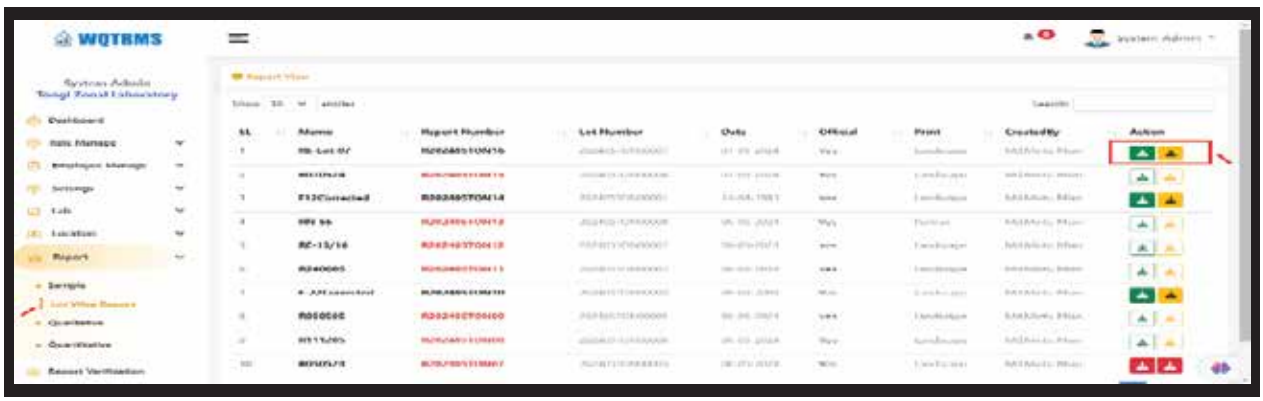
31. In Location-Village, can create a new village and edit village.

32. In Location-Mouza he can create a new mouza, edit, remove mouza.

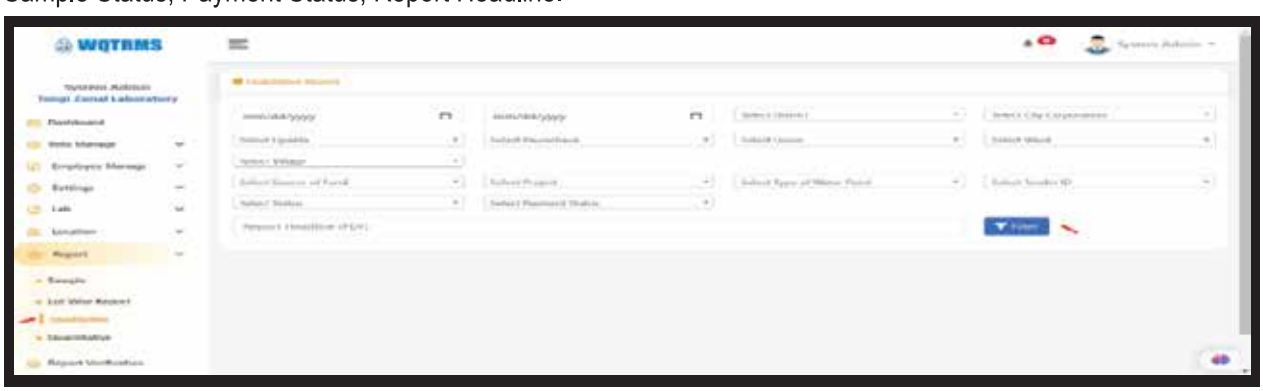
33. In Location-Pourashava can create a new POURASHAVA, edit, remove POURASHAVA.

34. In Location-City Corporation he can create a new city corporation and edit City Corporation.
35. In Report Section from -the Sample module can get a Sample Wise Report by Filtering with Sample ID, Water Point ID, Caretaker Name, Caretaker Phone Number, and Caretaker NID.

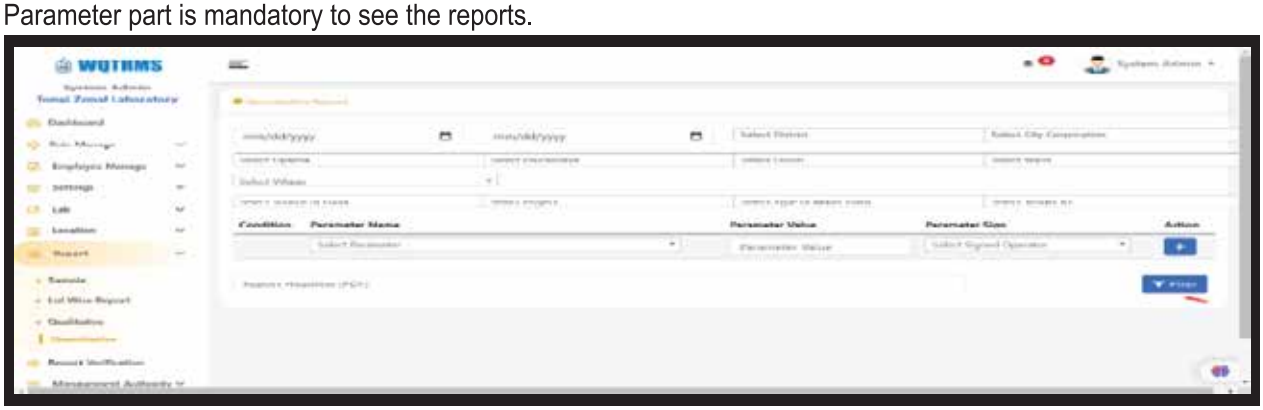
36. System admin can also view and download sample details.
37. In the Lot Wise Report can get the report view Lot wise. System admin He can also download those reports.



38. System admin can get the qualitative report by filtering with different criteria. Such as Date, District, City Corporation, Upazila, Pourashava, Union, Ward, Village, Source of Fund, Project, Type of Water Point, Tender ID, Sample Status, Payment Status, Report Headline.

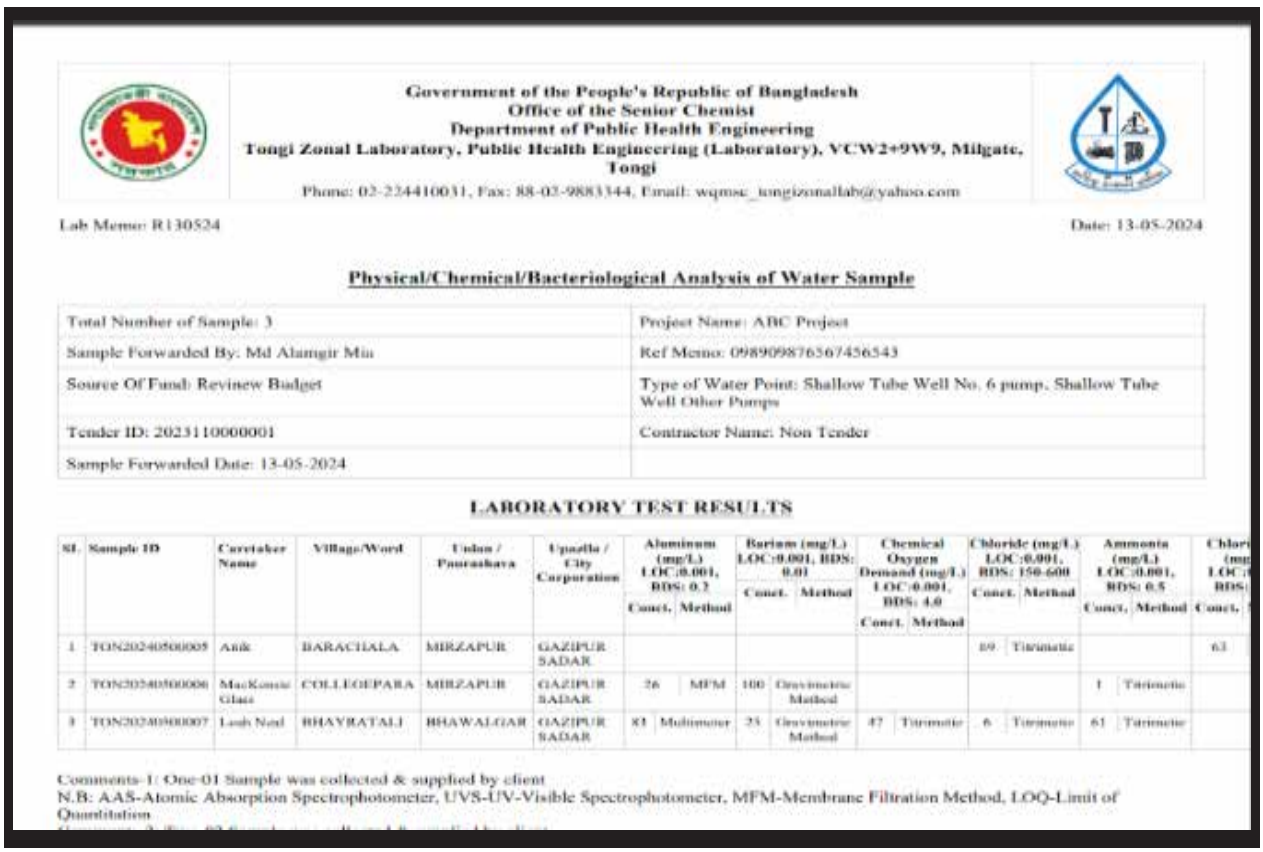


39. System admin can get the quantitative report by filtering with different criteria. Such as Date, District, City Corporation, Upazila, Pourashava, Union, Ward, Village, Source of Fund, Project, Type of Water Point, Tender ID, Sample Status, Payment Status, Condition Such as Parameter Name, Parameter Value, Parameter Sign. Here the Parameter part is mandatory to see the reports.



40. From the Report Verification module, can enter a Report Memo number and verify. System admin can also download the report.

System admin can download and print the pdf. In the report he will get a QR Code at the bottom of the report. Admin can scan the QR code through mobile and get the report directly in the mobile device.



Government of the People's Republic of Bangladesh
Office of the Senior Chemist
Department of Public Health Engineering
Tongi Zonal Laboratory, Public Health Engineering (Laboratory), VCW2+9W9, Milgate, Tongi
Phone: 02-224410031, Fax: 88-02-9883344, Email: wqmsc_tongizonallab@yahoo.com

Lab Memo: R130524 Date: 13-05-2024

Physical/Chemical/Bacteriological Analysis of Water Sample

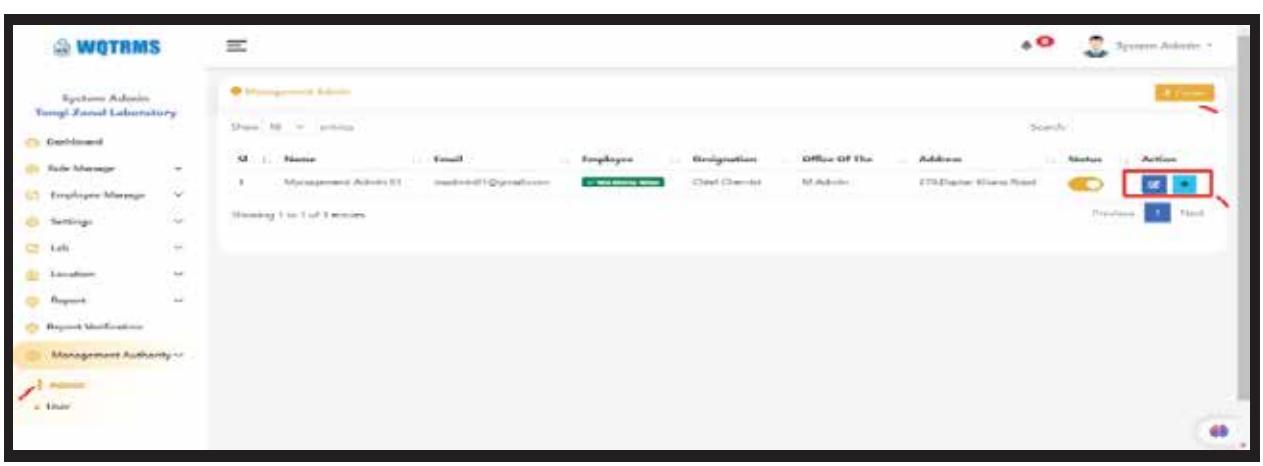
Total Number of Sample: 3	Project Name: ABC Project
Sample Forwarded By: Md Alamgir Mia	Ref Memo: 098909876567456543
Source Of Fund: Revinew Budget	Type of Water Point: Shallow Tube Well No. 6 pump, Shallow Tube Well Other Pumps
Tender ID: 2023110000001	Contractor Name: Non Tender
Sample Forwarded Date: 13-05-2024	

LABORATORY TEST RESULTS

Sl.	Sample ID	Caretaker Name	Village/Word	Union / Paurashava	Upazila / City Corporation	Aluminum (mg/L) LOC:0.001, BDS: 0.2		Barium (mg/L) LOC:0.001, BDS: 0.01		Chemical Oxygen Demand (mg/L) LOC:0.001, BDS: 4.0		Chloride (mg/L) LOC:0.001, BDS: 150-600		Ammonia (mg/L) LOC:0.001, BDS: 0.5		Chlori (mg LOC: BDS:
						Conct.	Method	Conct.	Method	Conct.	Method	Conct.	Method	Conct.	Method	Conct.
1	TGN20240500005	Alik	BARACHALA	MIRZAPUR	GAZIPUR SADAR							89	Titrimetric			63
2	TGN20240500006	MacKenzie Glass	COLLEGEPARA	MIRZAPUR	GAZIPUR SADAR	26	MFM	100	Gravimetric Method					1	Titrimetric	
3	TGN20240500007	Leah Neal	BHAYRATALI	BHAWALGAR	GAZIPUR SADAR	83	Multimeter	25	Gravimetric Method	87	Titrimetric	6	Titrimetric	61	Titrimetric	

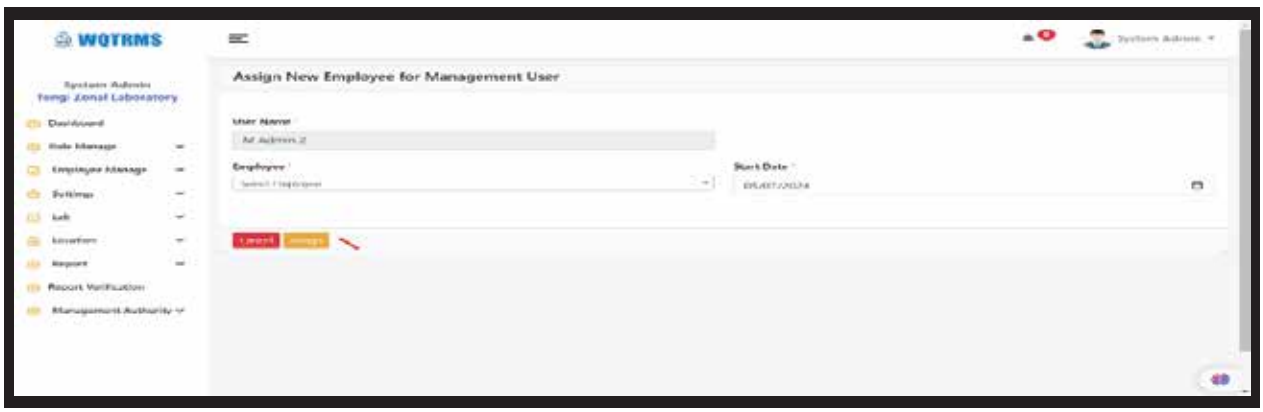
Comments: 1: One-01 Sample was collected & supplied by client
N.B: AAS-Atomic Absorption Spectrophotometer, UVS-UV-Visible Spectrophotometer, MFM-Membrane Filtration Method, LOQ-Limit of Quantitation

41. In Management Authority - Admin can create and edit Management Admin.



42. To assign an employee for Management Admin need to enter necessary information

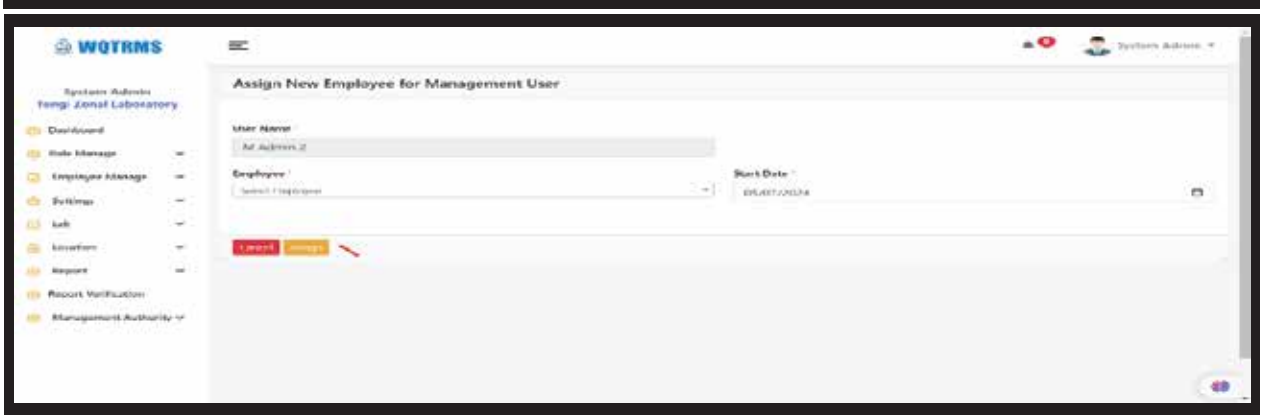
43. Select the employee and the start date. At last have to click assign. System admin will get a success message.



44. To create a management user , enter the necessary details and click to create.

45. System admin can also see- active or inactive users, remove user, edit management user, and assign an employee for that management user role.
To create a management user System admin has to enter the necessary details and click to create.

46. System admin has to assign an employee for Management User. For that he has to click assign.



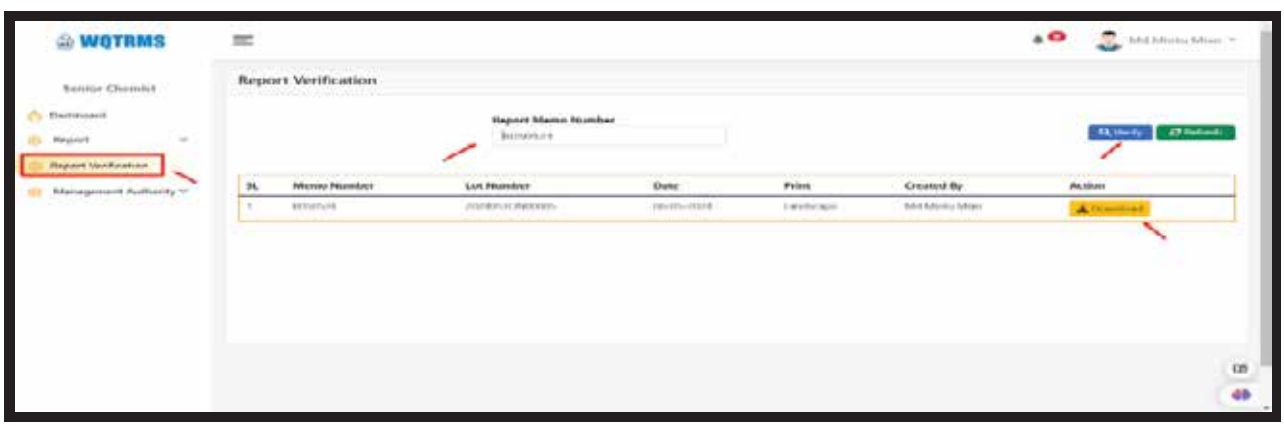
1.2 Operation Manual of Management Admin

- To access WQTRMS,use URL: https://wqtrms.dphe.gov.bd/login

From the dashboard management admin will be able to see the management users.

From the Report Module he can see the Lot Wise Report.

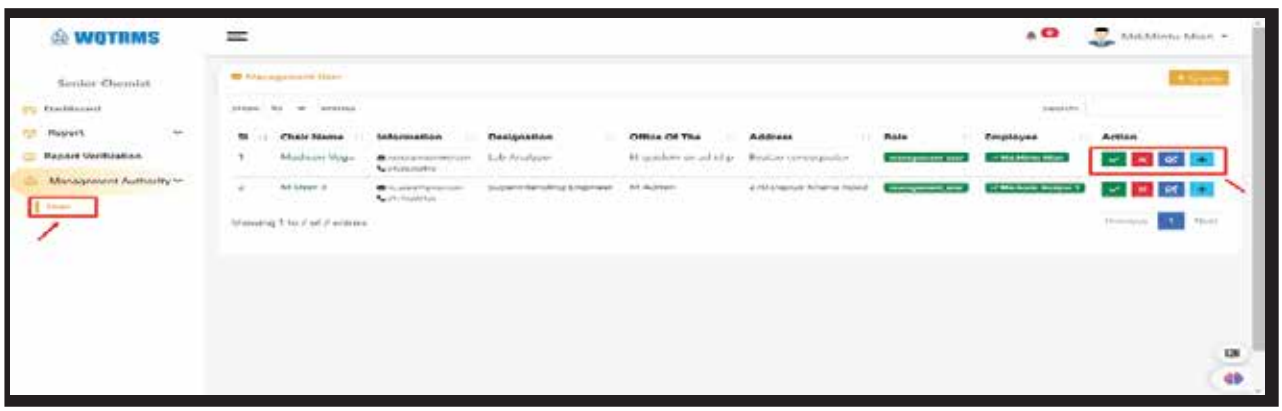
From the Report Verification module, he can enter a Report Memo number and Verify. He can also download the report.



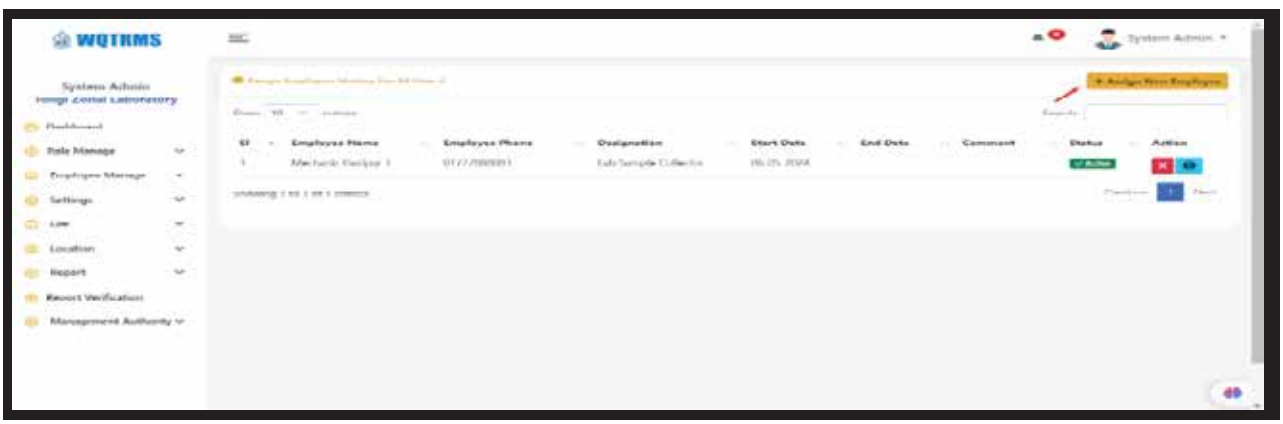
From Management Authority, Management admin can create management users

To create a management user management admin has to enter the necessary details and click to create.

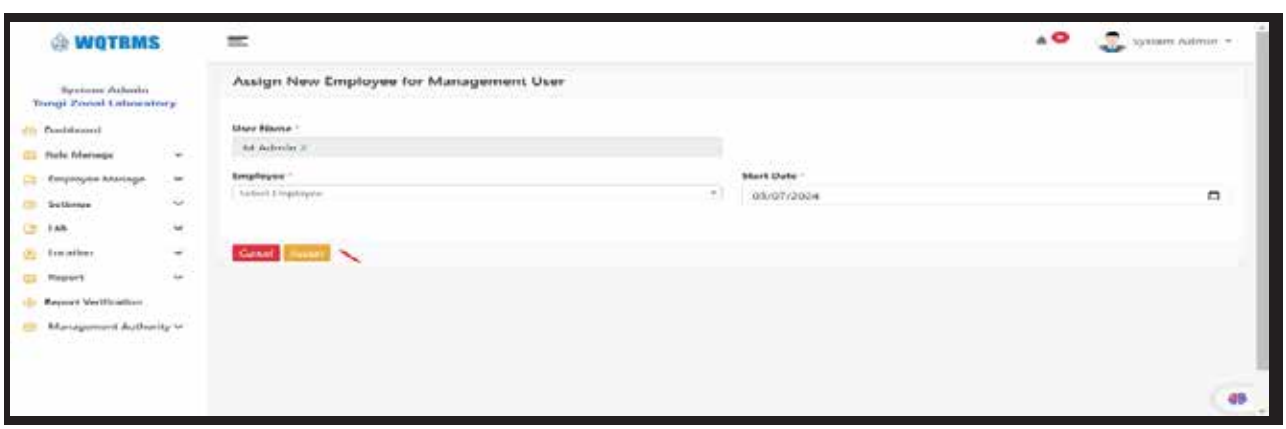
Admin can also see if the user is active or inactive, remove user, edit management user, and assign an employee for that management user role.



Admin has to assign an employee for Management User. For that he has to click assign.



Then he has to select an employee and date. At last click assign.



Sixth session

Discussion on Transaction Data Entry System
Customer Registration Entry, Application Management
Sample Collection Form, Bill Management,
Lab Management, Notification Management
Payment Gateway Integration
Development of Mobile Base Application for Data Entry
Responsibilities of System SAE and EE

Sixth session

6.1 Topic:

- Discussion on Transaction Data Entry System
- Customer Registration Entry
- Application Management
- Sample Collection Form
- Bill Management
- Lab Management
- Notification Management
- Payment Gateway Integration
- Development of Mobile Base Application for Data Entry
- Responsibilities of System SAE and EE

6.2 Objectives of the lesson: Participants at the end of this session -

- Can explain Transaction Data Entry System (Registration, Application Management,
- Sample collection, Bill Management, LAB Management, Notification, Payment Gateway, Mobile Application)
- Can understand the responsibilities of System SAE and EE

6.3 Duration: 1.30hr

6.4 Training Materials: Whiteboard, whiteboard marker, multimedia screen, duster, and manual.

6.5 Procedures for Conducting Training

SUBJECT	ACTIVITIES
Name and purpose of discussion	● The name of the subject to be discussed must be presented in writing. ● What the participants want to learn from this discussion should be known through questions. ● Pre-written objectives should be presented and participants' expectations should be compared with them.
Discussion	● The topic should be presented through questions. ● Participants should be encouraged to participate in discussions. ● Care must be taken whether questions are presented systematically or not.
Summary of topics discussed	● At the end of the discussion, the entire subject should be discussed.
Assessment	● To assess how much the participants know the subject matter by presenting and answering questions.

6.6.1 Transactional Data Entry

Transactional data relates to the transactions of the organization and includes data that is captured, for example, when a product is sold or purchased. Master data is referred to in different transactions, and examples are customer, product, or supplier data.

1. Customer Registration Entry
2. Application Management
3. Sample Collection
4. Responsibilities of Sub Assistant Engineer (SAE) and Executive (EE)
5. Bill Management
6. Lab Management
7. Notification Management
8. Payment Gateway Integration
9. Development of Mobile Base Application for Data Entry

Training Manual
on
Water Quality Testing & Report Management (WQTRM) Software

MANUAL DEVELOPED BY:

ENGR. MD. JAHIDUL HASAN, CONSULTANT

FERBRUARY, 2024

Office of the Executive Engineer
Training Department
HRD Building
36-37, Bir Uttam AK Khandkar Road, Mohakhali, Dhaka-1212

ম্যানুয়াল সংকলন

প্রকৌশলী মোঃ জাহিদুল হাসান, কনসাল্ট্যান্ট

মূদ্রণ সহায়তা:

জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবিলায় মাল্টি সেক্টর প্রকল্প (ইএমসিআরপি)

সমন্বয়ক:

প্রশিক্ষণ বিভাগ, জনস্বাস্থ্য প্রকৌশল অধিদপ্তর, মহাখালী, ঢাকা-১২১২

প্রকাশকাল:

নভেম্বর, ২০২৩

ডিজাইন ও মূদ্রণ:

জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবিলায় মাল্টি সেক্টর প্রকল্প (ইএমসিআরপি)

কপি স্বত্ত্বাধিকারী:

জনস্বাস্থ্য প্রকৌশল অধিদপ্তর

Office of the Executive Engineer
Training Department
HRD Building
36-37, Bir Uttam AK Khandkar Road, Mohakhali, Dhaka-1212

1. Customer Registration Entry: All customers who have created online accounts need to provide customer registration information, which is used to capture customer profiles.

2. Application Management:

Create an application module for receiving online application
Create user and application ID
Deliver notification through SMS and e-mail after successful submission of the application
Notification for payment (if pending) status through application code.

3. Sample Collection Form

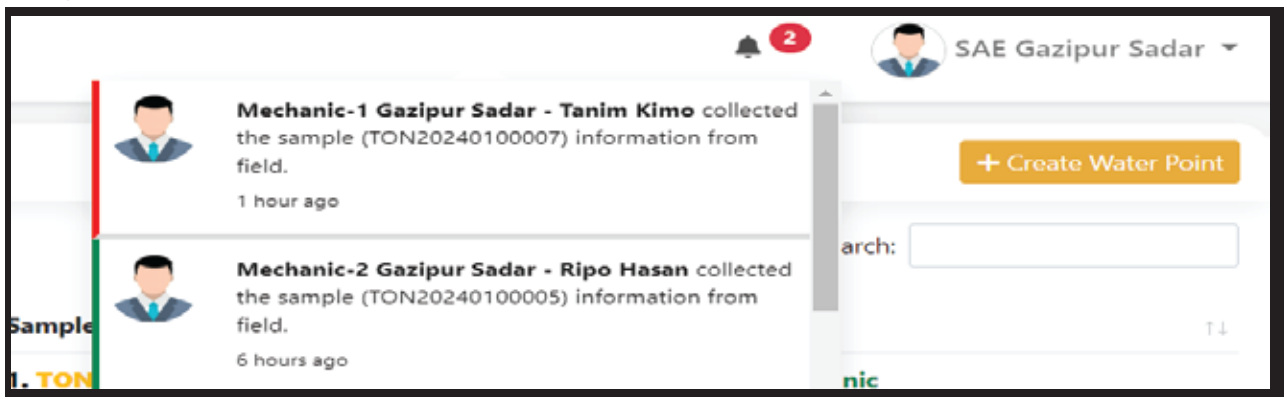
3. Operation Manual of Sub Assistant Engineer (SAE)

1. SAE can create a water point by clicking on the https://wqtrms.dphe.gov.bd/water-point or URL: https://wqtrms.dphe.gov.bd/login

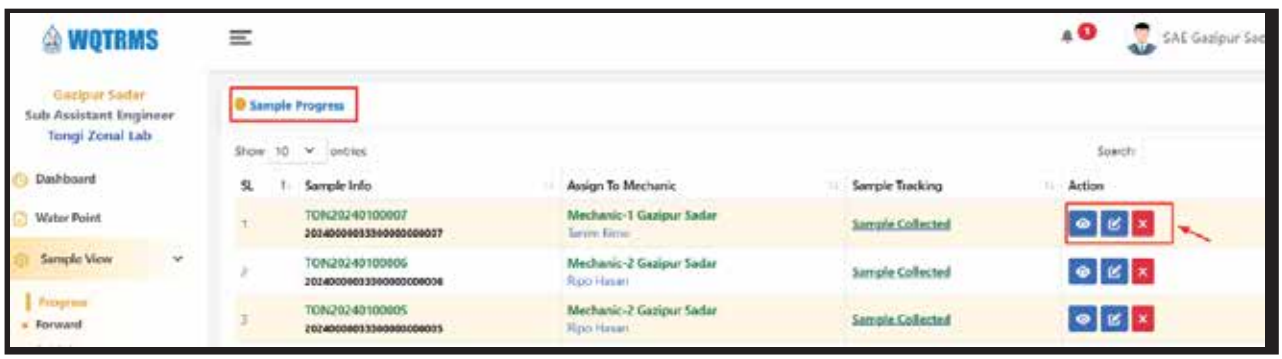
2. SAE can create 2 types of Water Point. One is new and another is for existing water point by clicking the “Existence Water Point”, by entering required data

3.Year, Serial Number will be auto generated by clicking create button in Water Point.

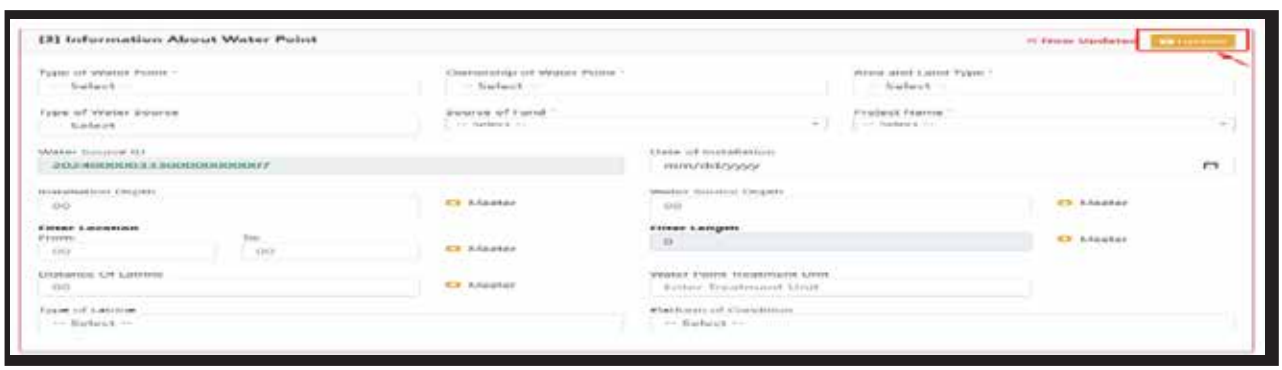
4.The Water Point ID is generated as per the Year, District and Upazila Code and Serial Number. By clicking the Create button we can create the Water Point.
5.SAE has to Assign Mechanics to Collect the Water Sample. Can assign two types of mechanic. One is upazila mechanic and another is Lab.
6.In Upazila Mechanic, SAE can choose a mechanic from upazila by dropdown. By clicking assign he can assign that mechanic to collect the sample
7.By selecting Lab, it will be forwarded to lab for assigning sample collector. Similarly have to click Assign Button.



9. In Sample Progress, SAE can see all the Samples. He can view, edit or delete the sample.

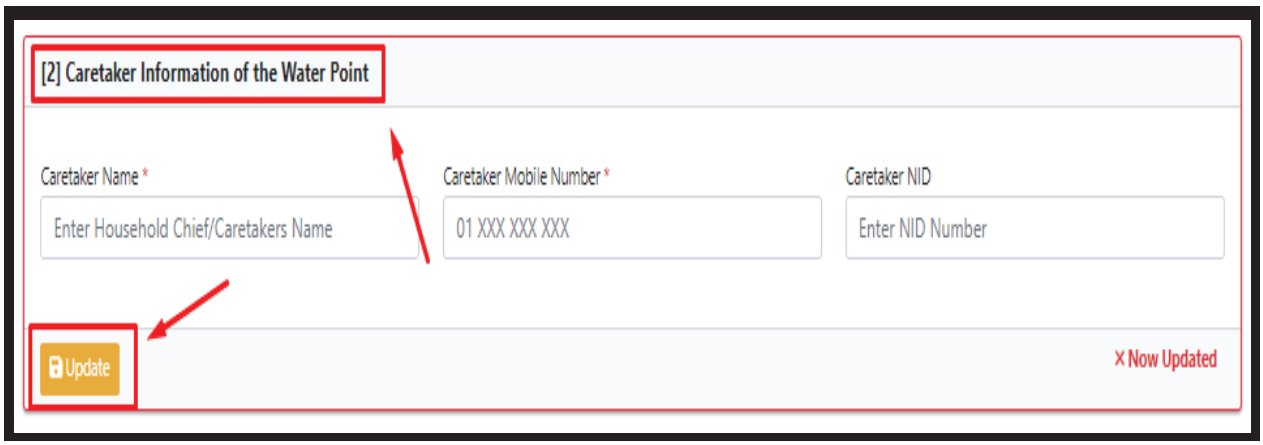


10. SAE will get a Sample Collection Form.



11. Information of SAMPLE Area, SAE has to Select District, Upazila, Union, Ward, Village, Mouza, Poura shavas, and City Corporations by Drop-down. Additionally, he has to write Other's Address Name, Other Area Information. By clicking Update Button the Information of SAMPLE Area will be updated.

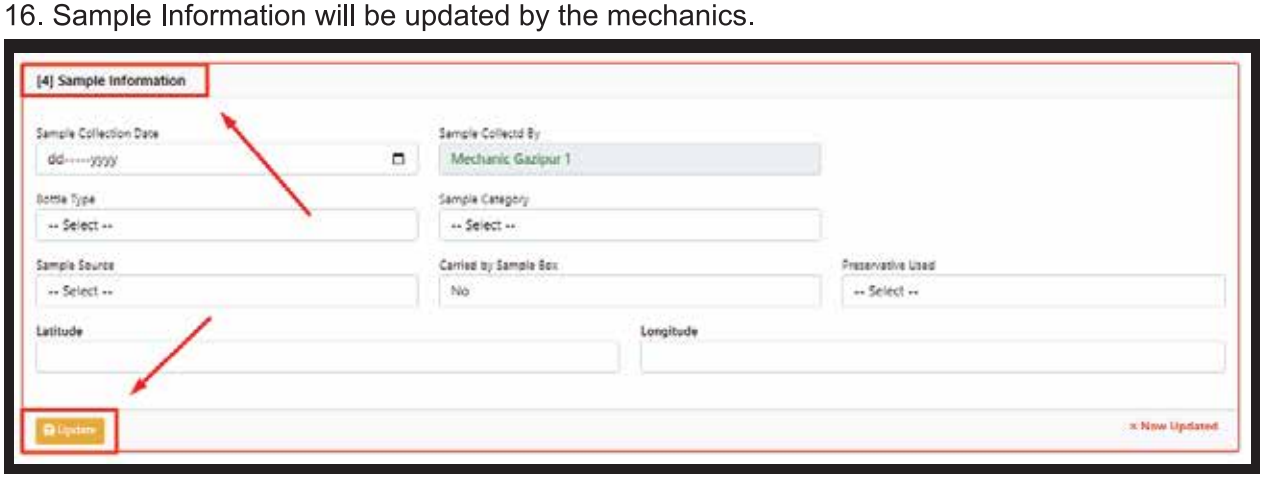
12. From Caretaker Information of the Water Point, SAE has to enter the Caretaker Name, Caretaker Mobile Number, and Caretaker NID. By clicking Update Button the Caretaker Information of the Water Point will be updated.



13. From Information About Water Point, SAE will choose Type of Water Point, Ownership of Water Point, Area and Land Type, Type of Water Source, Source of Fund, Project Name, Date of Installation by Drop-down.

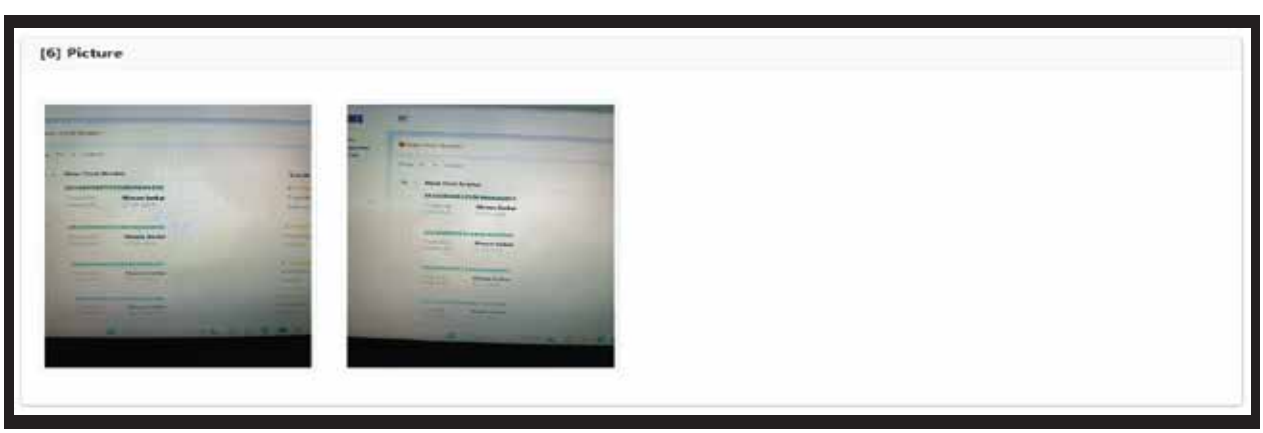
14. Additionally, one has to enter manually Installation Depth, Water Source Depth, Filter Location, Filter Length, Distance of Latrine, and Water Point Treatment Unit. There are also two dropdown fields Type of Latrine, Platform of Condition.

15. By clicking Update Button the Information about Water Point will be updated.
16. Sample Information will be updated by the mechanics.



17. From Contractor's Information, SAE has to Choose Tender List by drop-down. According to the Tender the Name, Mobile Number, Package will be auto generated.

18. The Picture Field will be filled by Mechanic during the Sample Collection.

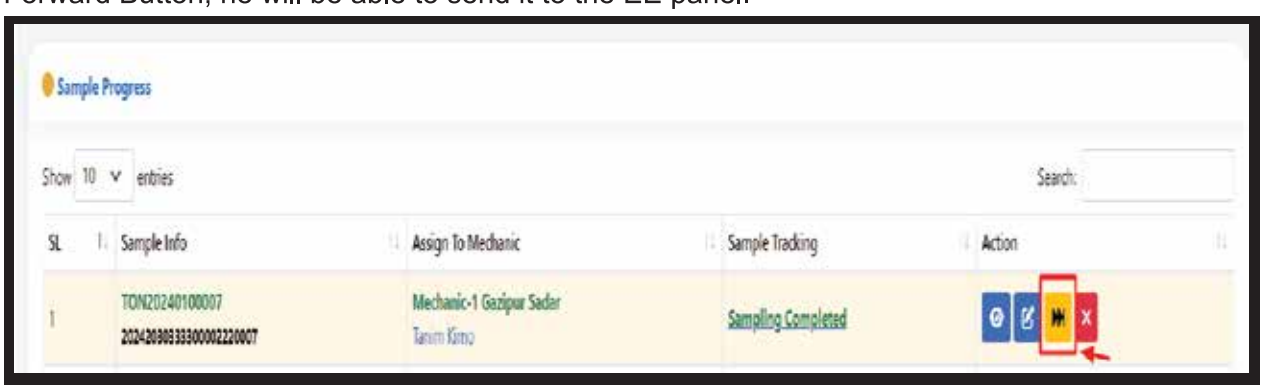


19. In Sample Parameter Assign Field SAE has to choose which parameter they need to send for the test. He can choose the parameter by clicking the check box.

20. After updating all these fields SAE will be able to submit the Sample Application Form. By clicking Final Submit his Sample Application will be submitted.

21. SAE will get a Success message and In Sample Progress he can view, edit, and forward and delete the Water Point/Sample.

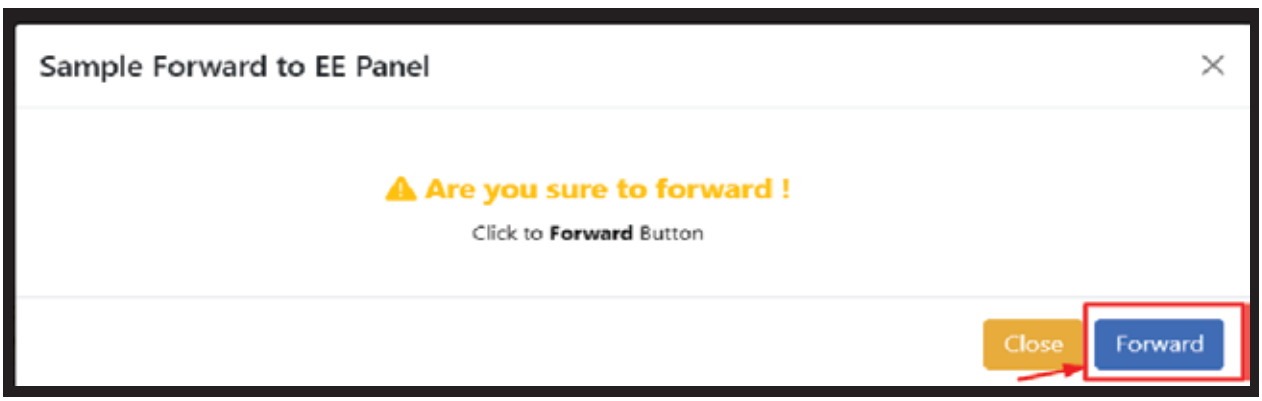
22. For further process, SAE has to forward it to the Executive Engineer Panel. By Clicking the Forward Button, he will be able to send it to the EE panel.



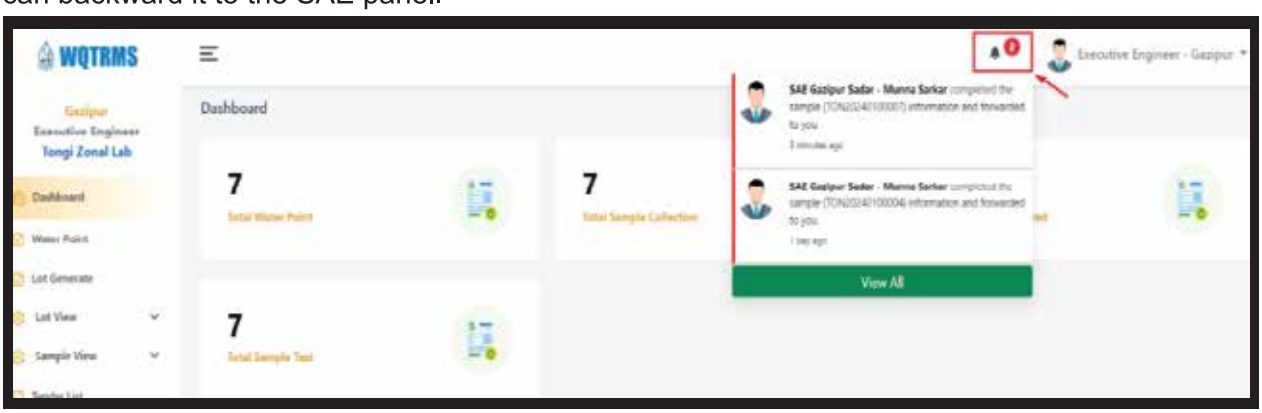
23 After Forwarding SAE will get a success message that the sample forward to the Executive Engineer panel.

4. Operation Manual of EXECUTIVE ENGINEER (EE)

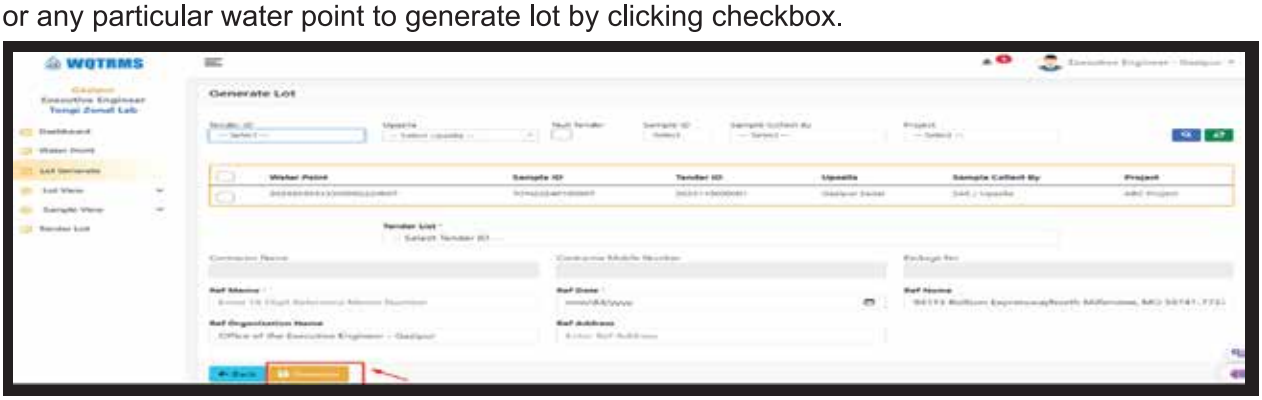
1.To access WQTRMS, use URL: https://wqtrms.dphe.gov.bd/login



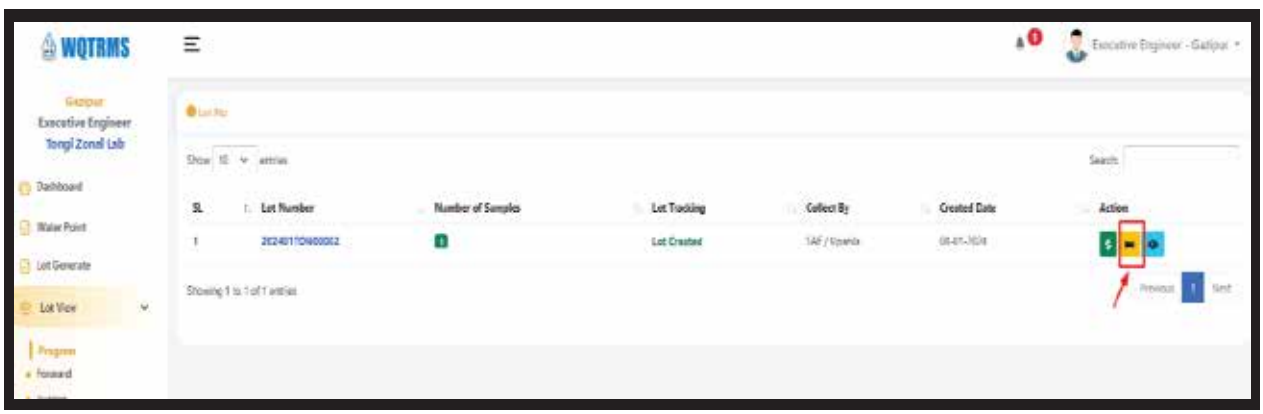
2.The Executive Engineer will get a notification; that the sample is forwarded to the
3. EE will get the Forwarded Sample in Sample Progress. He can see the Sample Details and also can backward it to the SAE panel.

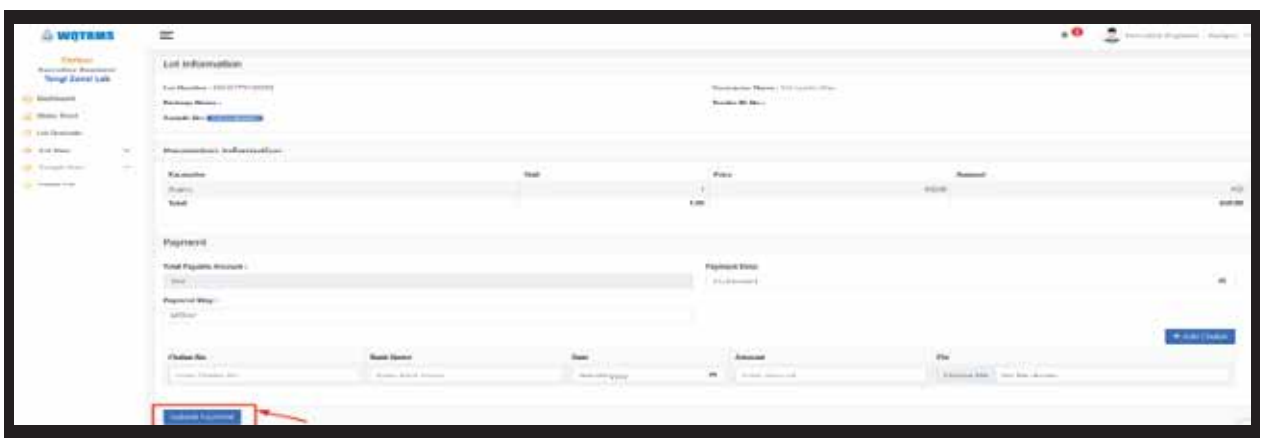


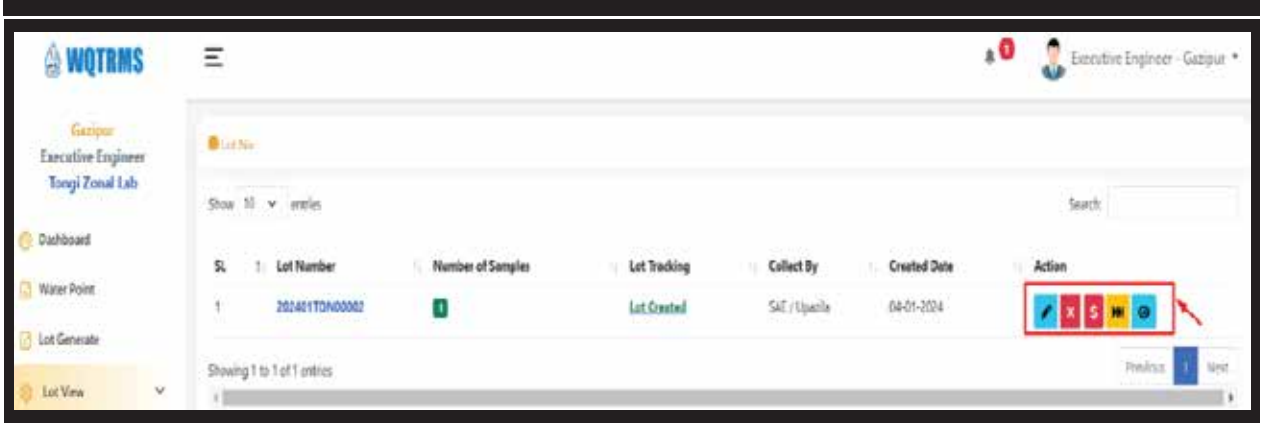
4.To generate lot, EE has to select Tender ID, Upazila, Sample ID, and Sample Collect by, Project from drop-down. If the Tender ID is null, he can choose the Null Tender Checkbox.
5.There will be also a list of samples that was forwarded to SAE. EE can select multiple water point or any particular water point to generate lot by clicking checkbox.



6.After generating a lot, he will get a Success Message.





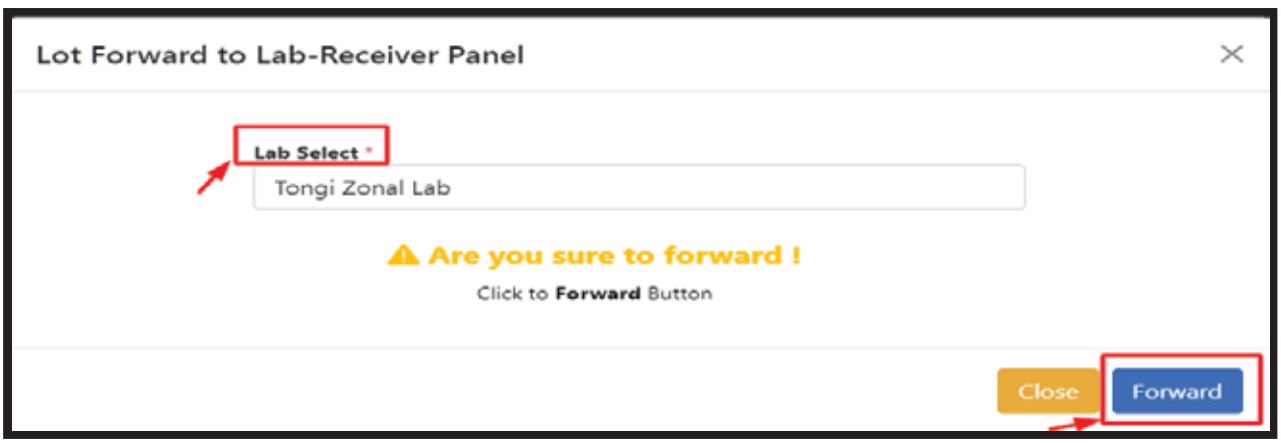


10. Other details will be auto selected. To complete the payment, he has to click the Submit Payment button.

11. EE will get a message after successful payment.

12. At lasted has to forward the lot to the lab receiver for further processing. He can Select Lab by dropdown and forward it.

13. Executive Engineer will get a success message after forwarding it.



Seventh session

Discussion on Transaction Data Entry System
Customer Registration Entry, Application Management
Sample Collection Form, Bill Management,
Lab Management, Notification Management
Payment Gateway Integration
Development of Mobile Base Application for Data Entry
Responsibilities of System SAE and EE

Seventh session

7.1 Topic:

- Lab Management System (LIMS)
- Responsibilities of LAB Technician, Chemist, LAB In-Charge
- Notification Management System
- Mobile Application

7.2 Objectives of the lesson: Participants at the end of this session -

- Can learn about Lab Management Systems (LIMS)
- Can Learn about the Responsibilities of LAB Technician, Chemist, LAB In-Charge
- Can learn about Notification Management System
- Can learn about Mobile Application

7.3 Duration: 1.00hr

7.4 Training Materials: Whiteboard, whiteboard marker, multimedia screen, duster, and manual.

7.5 Procedures for Conducting Training

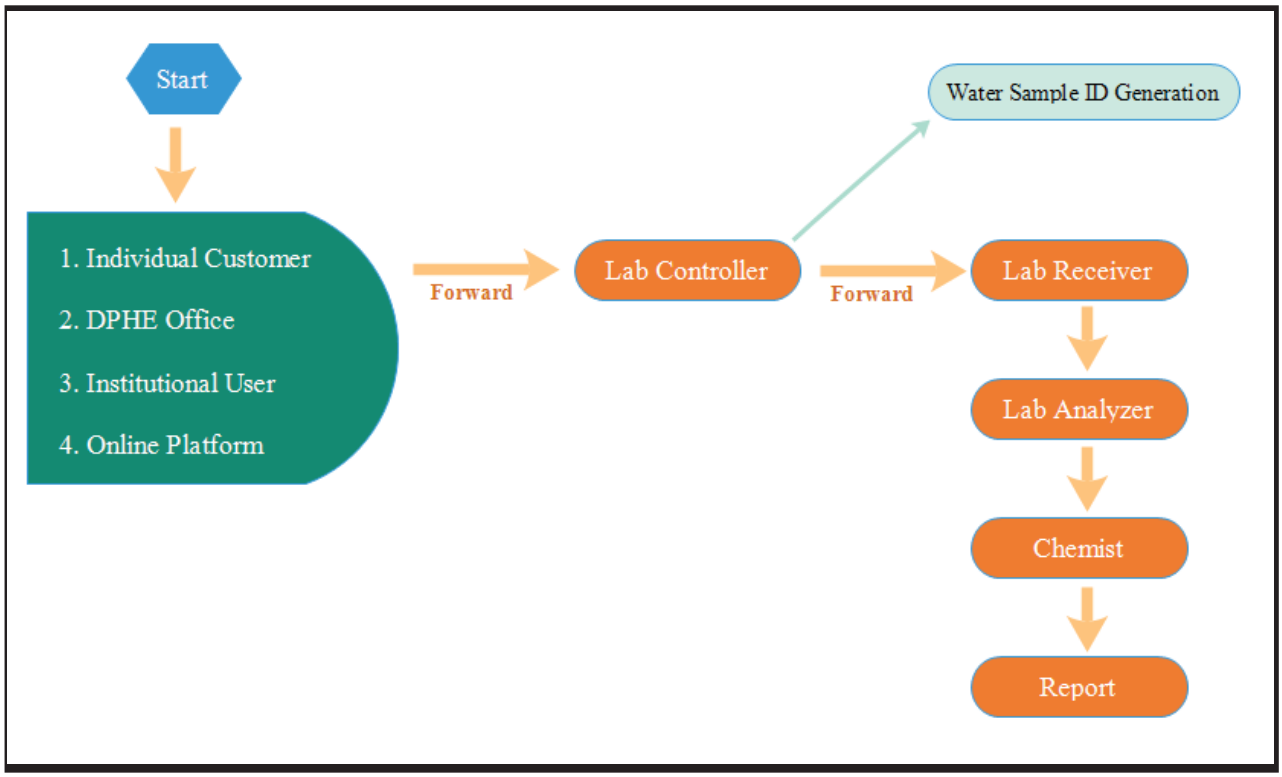
SUBJECT	ACTIVITIES
Name and purpose of discussion	● The name of the subject to be discussed must be presented in writing. ● What the participants want to learn from this discussion should be known through questions. ● Pre-written objectives should be presented and participants' expectations should be compared with them.
Discussion	● The topic should be presented through questions. ● Participants should be encouraged to participate in discussions. ● Care must be taken whether questions are presented systematically or not.
Summary of topics discussed	● At the end of the discussion, the entire subject should be discussed.
Assessment	● To assess how much the participants know the subject matter by presenting and answering questions.

7.6.1 Lab Management System (LIMS):

A Laboratory Information Management System (LIMS) is software that allows you to effectively manage samples and associated data. By using a LIMS, your lab can automate workflows, integrate instruments, and manage samples and associated information.

The main purpose of a LIMS is to improve lab efficiency, quality control, and accuracy by reducing manual operations and generating LAB reports.

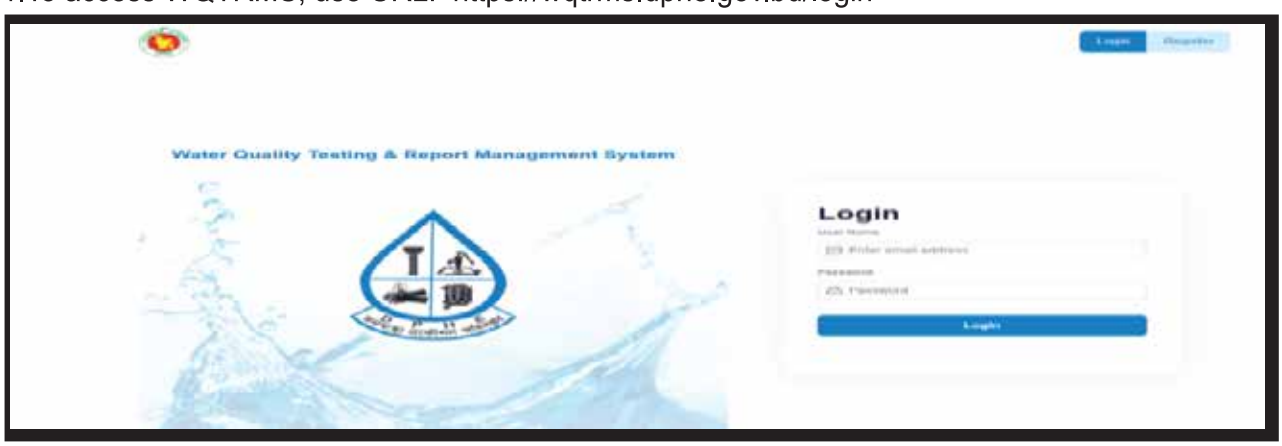
- Lab Profile/Lab Office Setup
- Lab user profile
- Sample Collection Scheduler
- Sample and Test type
- Sample test parameter builder
- Test result builder
- Attach inspected data or sample image
- Test report builder



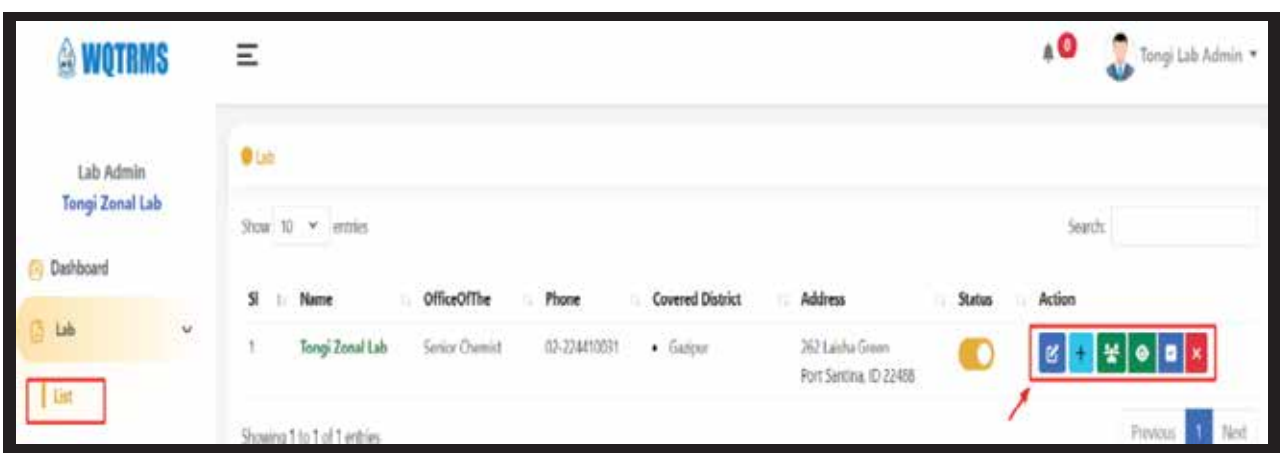
LIS Flow Chart

Operation Manual of LAB Admin

1.To access WQTRMS, use URL: https://wqtrms.dphe.gov.bd/login



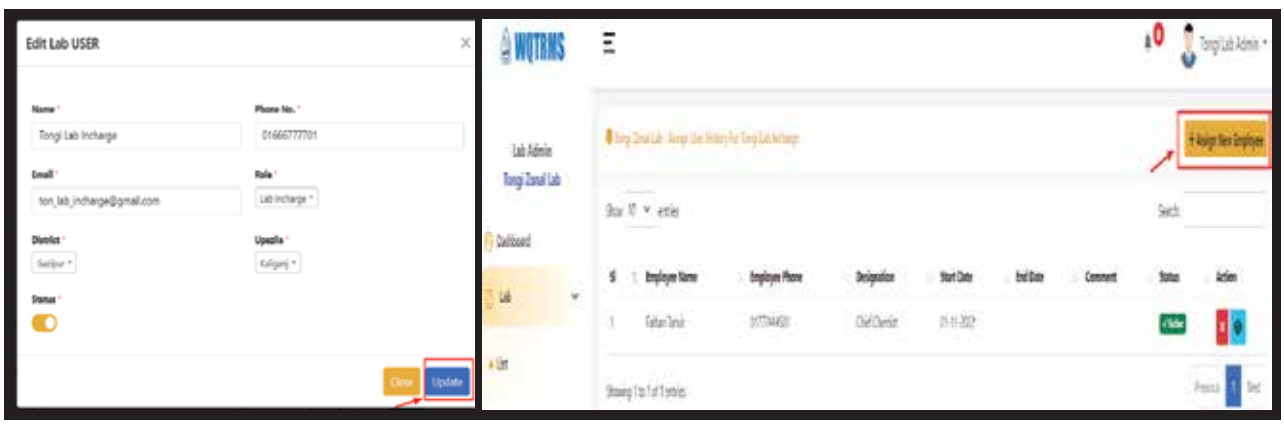
2.In Lab-List Admin can Edit Lab Information, View Lab Parameters, View Lab Users, View Lab Details, View Lab Administer Committee, Remove Lab,



3. Lab Admin can edit lab information. Lab Admin can also create a new lab.

4. Lab Admin can view and add parameters.

5. Lab Admin can view lab users, edit lab users, and assign employees.



6.Lab Admin can also create a new lab.

Operation Manual of LAB In Charge

To Create Water Point:

1.To Create Water Point, use URL: https://wqtrms.dphe.gov.bd/login

2.To log in, please use the provided User Name and Password.

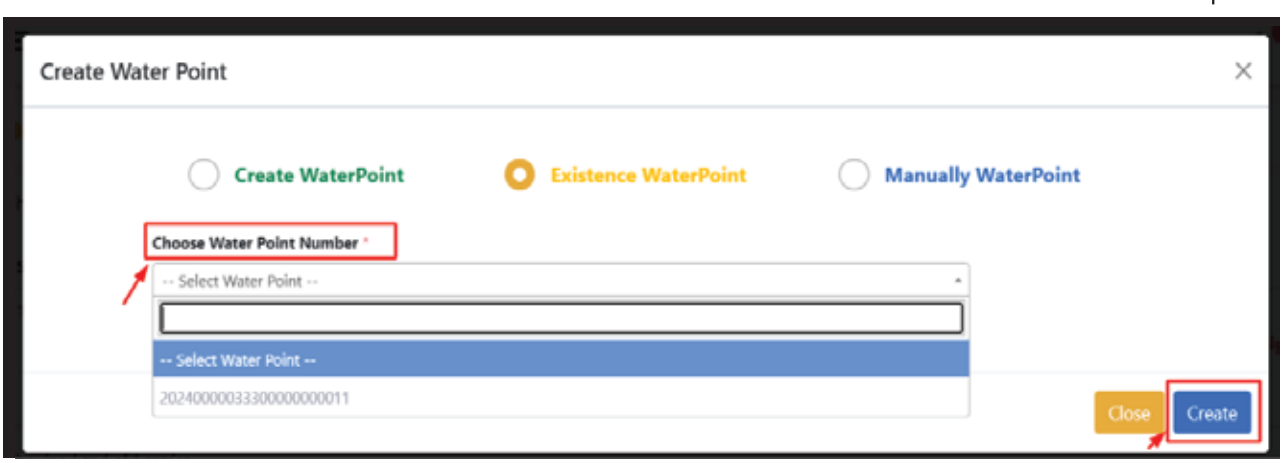
3. Lab In charge can create a water point by "Water Point" module. Alternatively, Lab In charge can directly access the Water Point section by going to the following URL: https://wqtrms.dphe.gov-.bd/water-point

4. Lab In charge can create three types of Water Point-1. newly Create Water Point 2. for Existence Water Point 3. Manually Water Point.

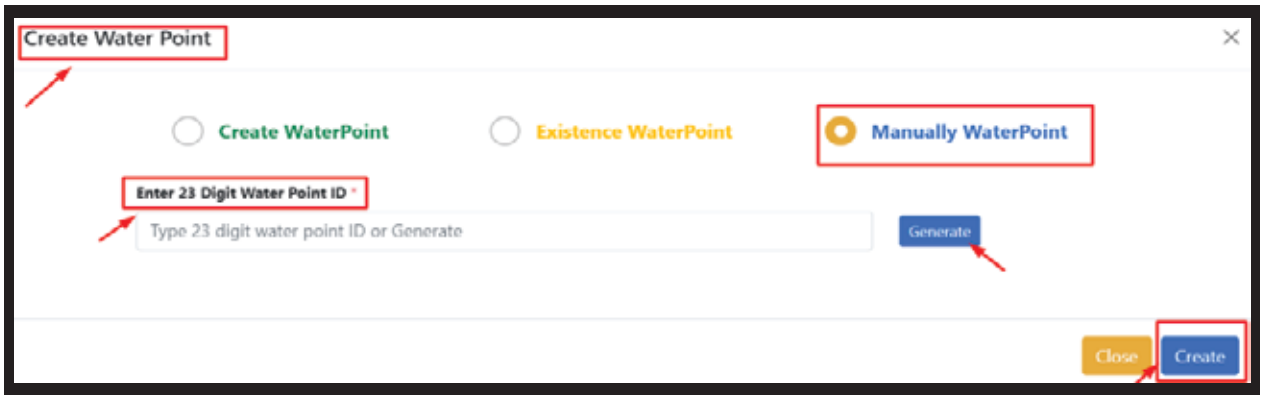
5. For Create Water Point Lab In charge has to Choose Year, District, Upazila and Serial Number will be auto generated. By clicking, create button he will be able generate Water Point.

6.Lab In charge will get a Success message.

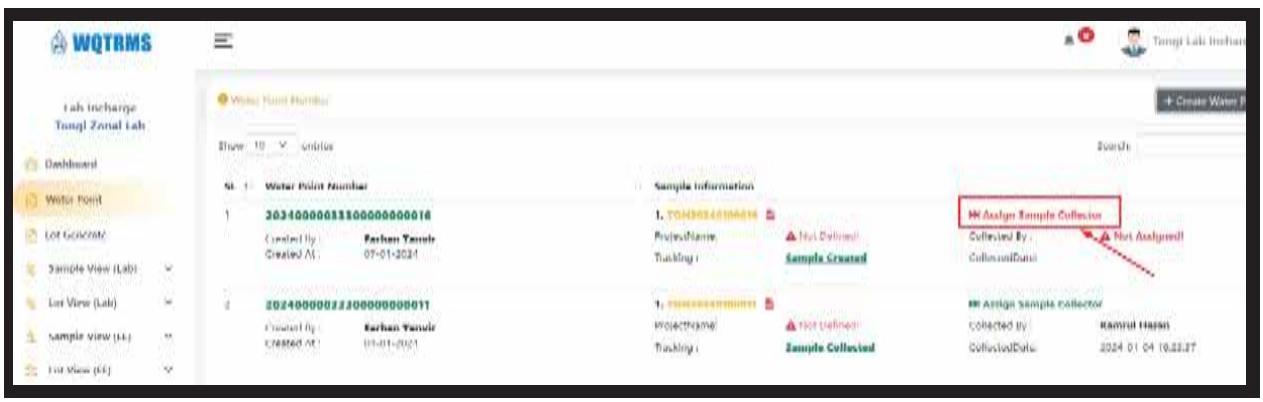
7. For Existence Water Point he has to Choose Water Point Number and click create to create the water point.



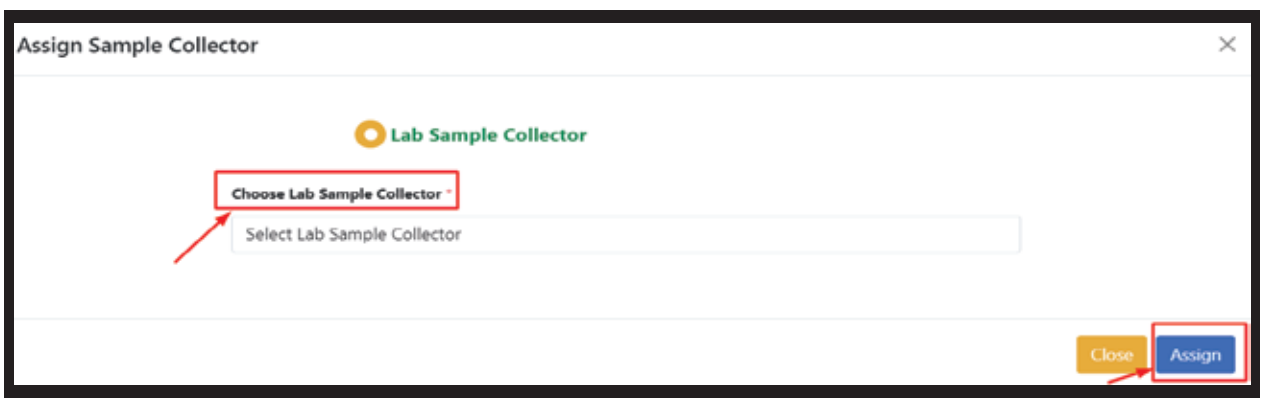
8. Water Point, he has entered a 23-digit ID to generate and click the create button. Lab In charge will get a Success message.



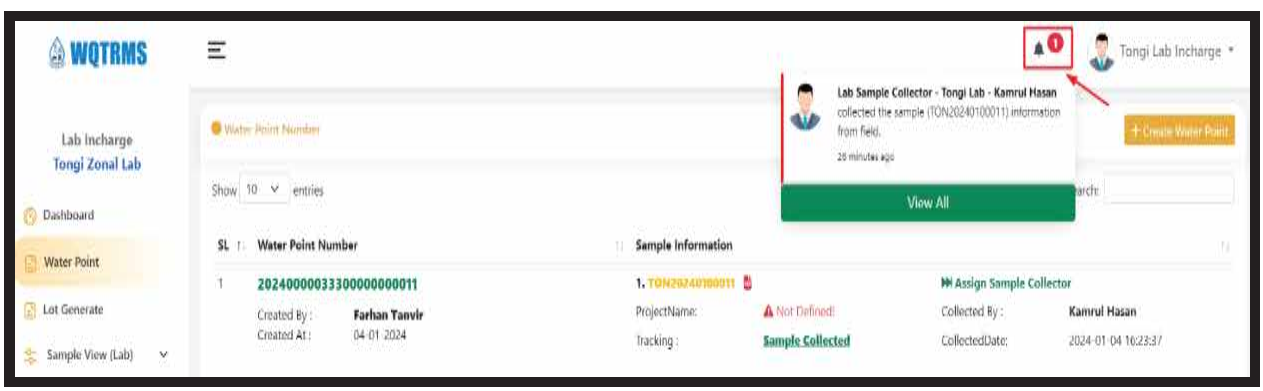
Lab In charge will get a Success message.



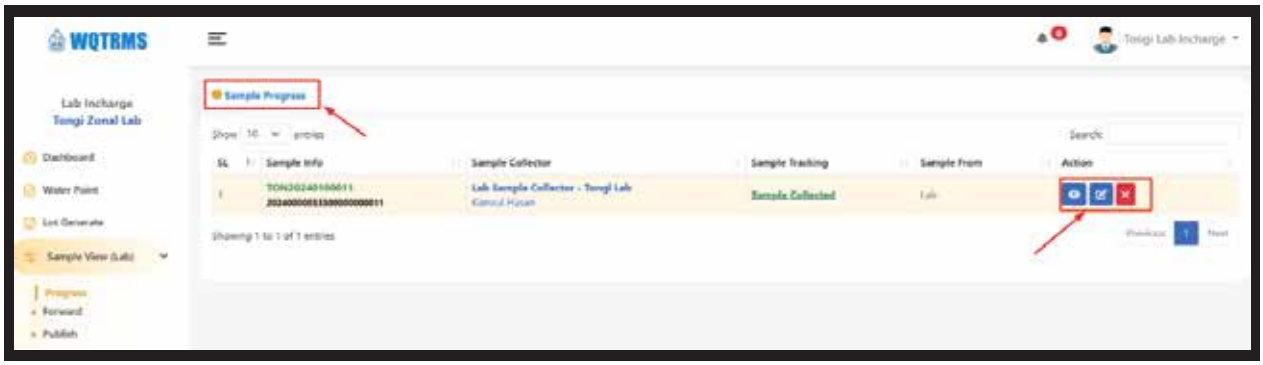
9.To Assign Sample Collector, he has to click to Assign Sample Collector. Then Lab In charge has to choose to Lab Sample Collector and Assign Sample collector.



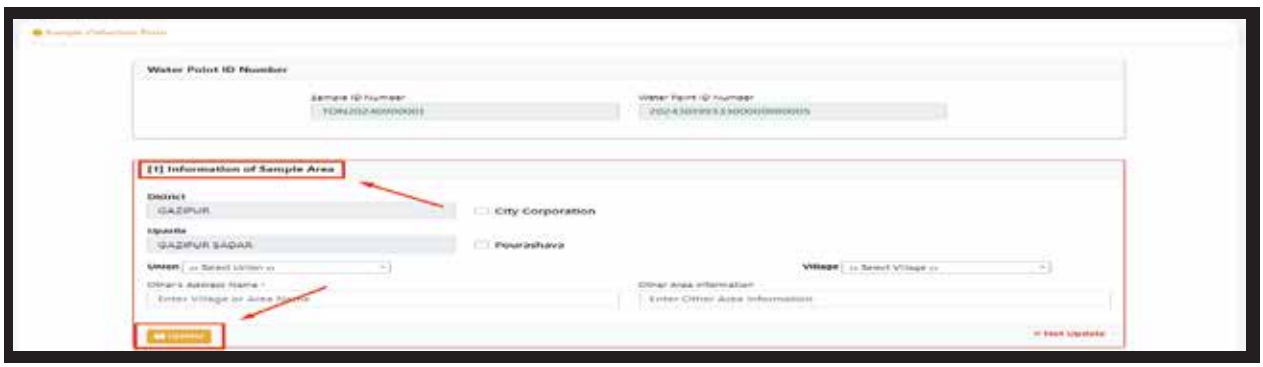
10. Lab In charge will get a notification after Collecting the Sample by Lab Sample Collector.



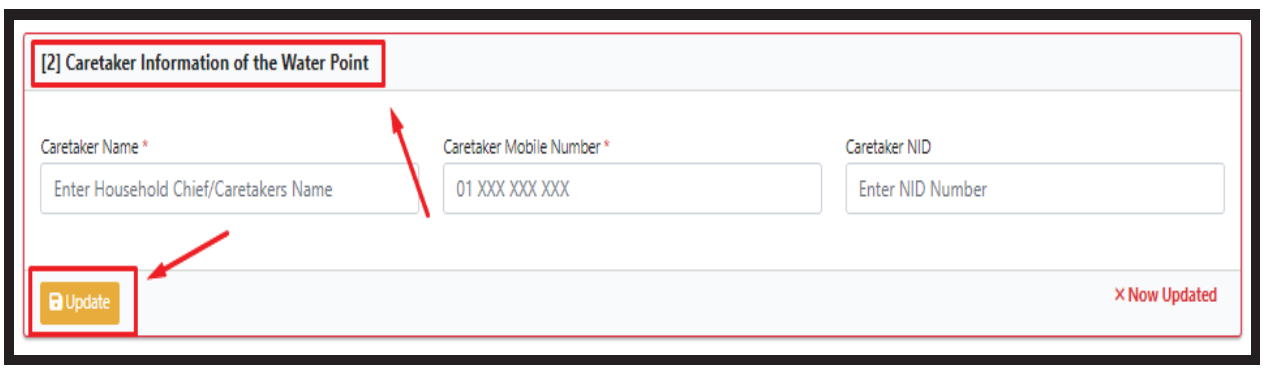
11. It will be stored in Sample Progress. Here Lab In charge can view Sample Details, Edit Sample Form and Delete the Sample.
12. To edit Lab In charge has to click the second option.



13. From Information of Sample Area, Lab In charge has to Select District, Upazila, Union, Ward, Village, Mouza, Pourashavas, and City Corporations by Drop-down. Additionally, he has to write Other's Address Name, Other Area Information. By clicking the Update Button, the Information of Sample Area will be updated.

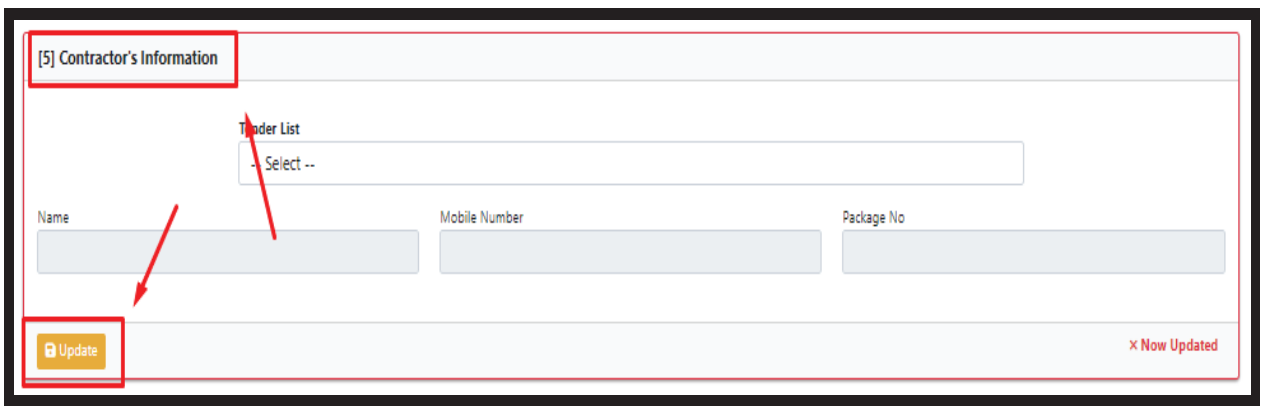


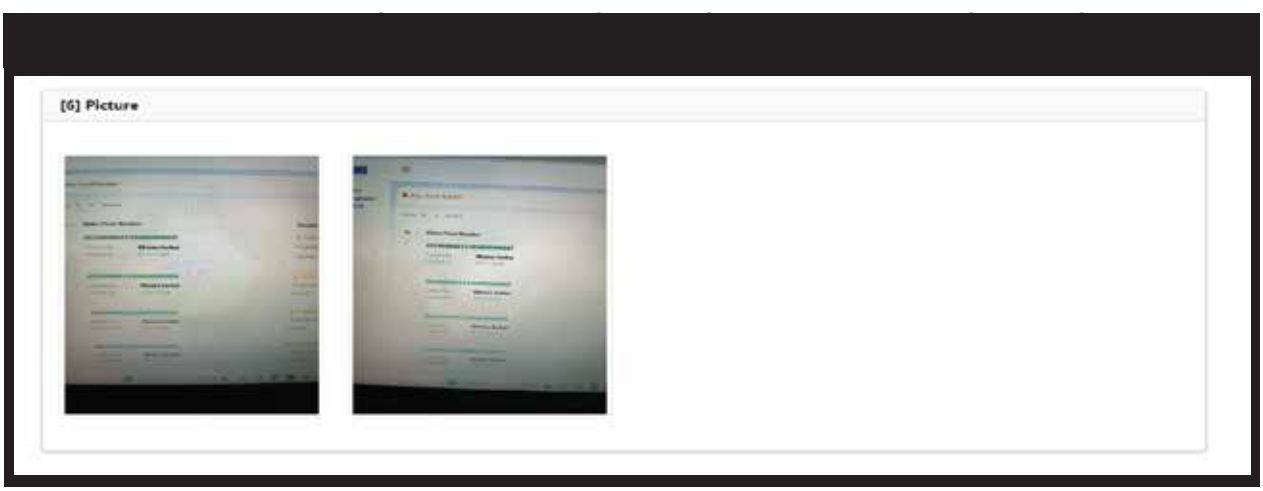
14. In Caretaker Information of the Water Point, Lab In charge has to enter the Caretaker Name, Caretaker Mobile Number, and Caretaker NID. By clicking Update Button the Caretaker Information of the Water Point will be updated.

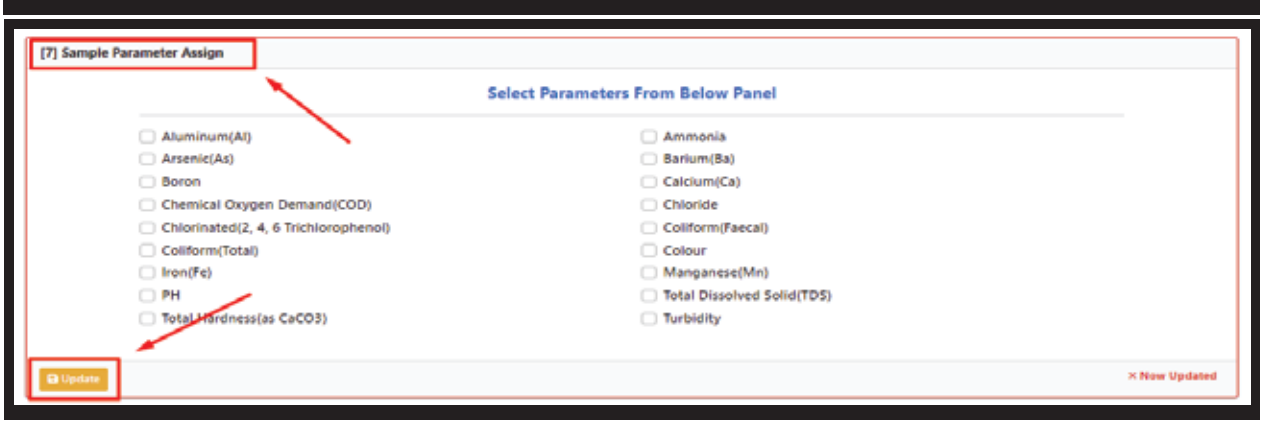


15. In Information about Water Point, Lab In charge will choose Type of Water Point, Ownership of Water Point, Area and Land Type, Type of Water Source, Source of Fund, Project Name, Date of Installation by Drop-down.
16.Additionally, one has to enter Installation Depth, Water Source Depth, Filter Location, Filter Length, Distance of Latrine, and Water Point Treatment Unit. There are also two dropdown fields Type of Latrine, Platform of Condition. By clicking the Update Button, the Information about Water Point will be updated.

17.Sample Information will be updated by the Lab Sample Collector.

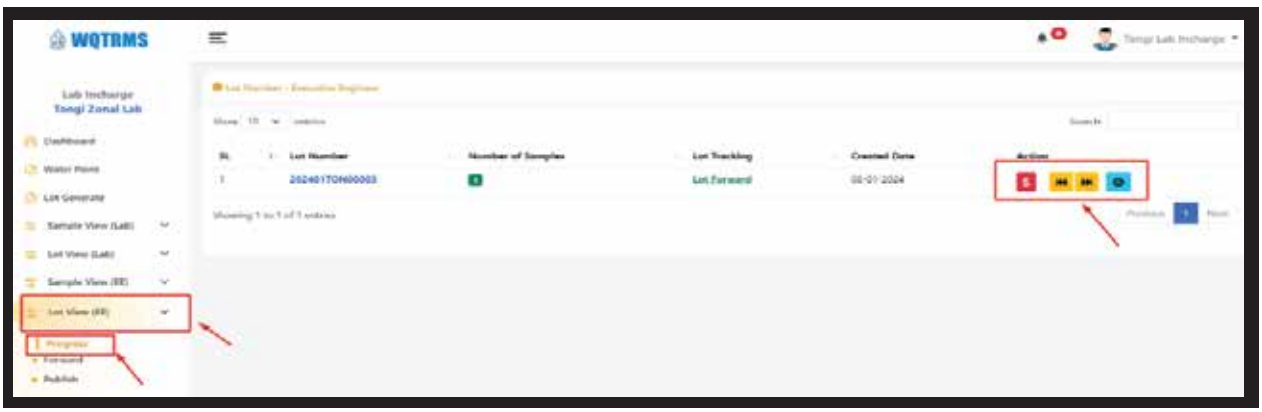


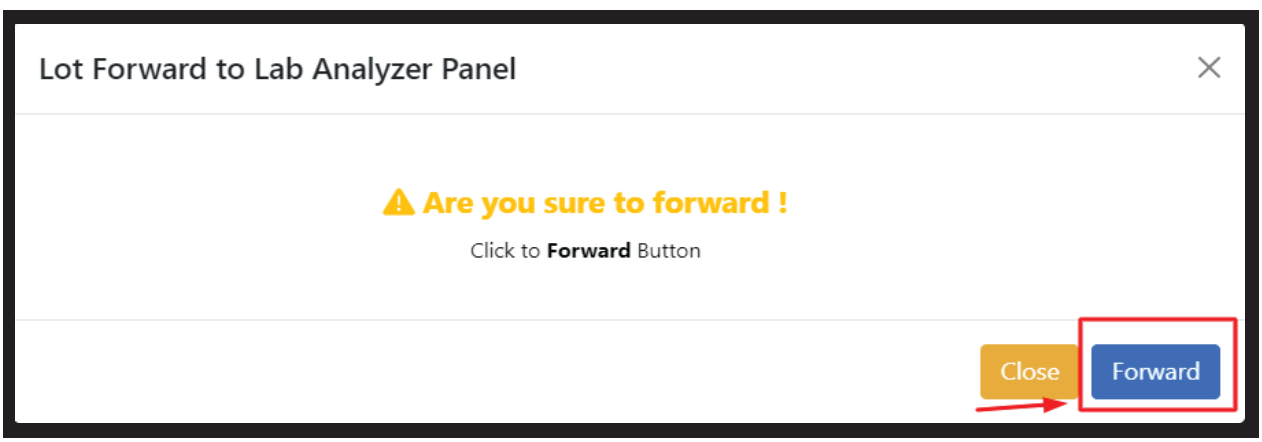


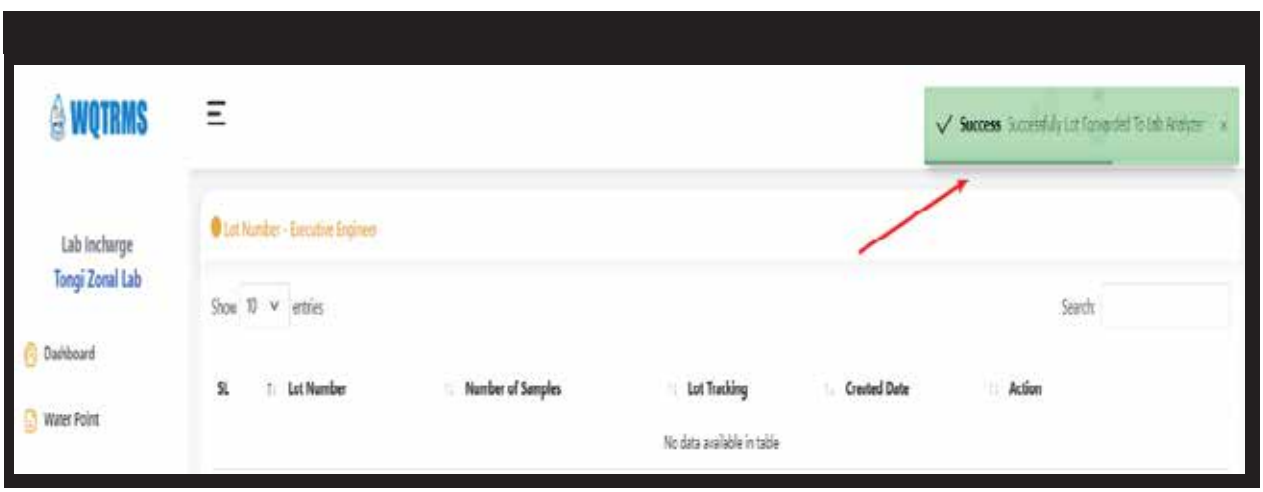


21.After updating all these fields Lab In charge will be able to submit the Sample Application Form. By clicking Final Submit his Sample Application will be submitted.

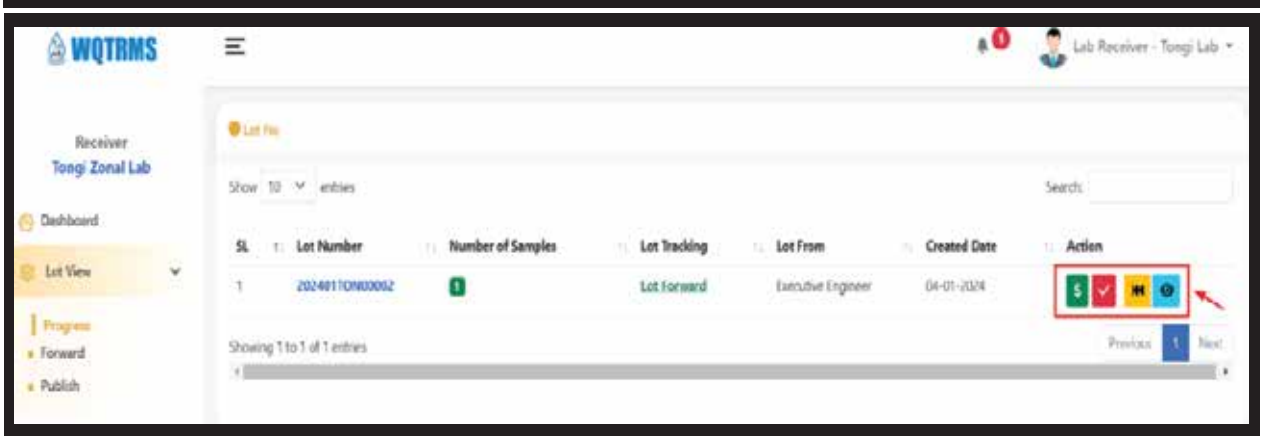
Approve Process:



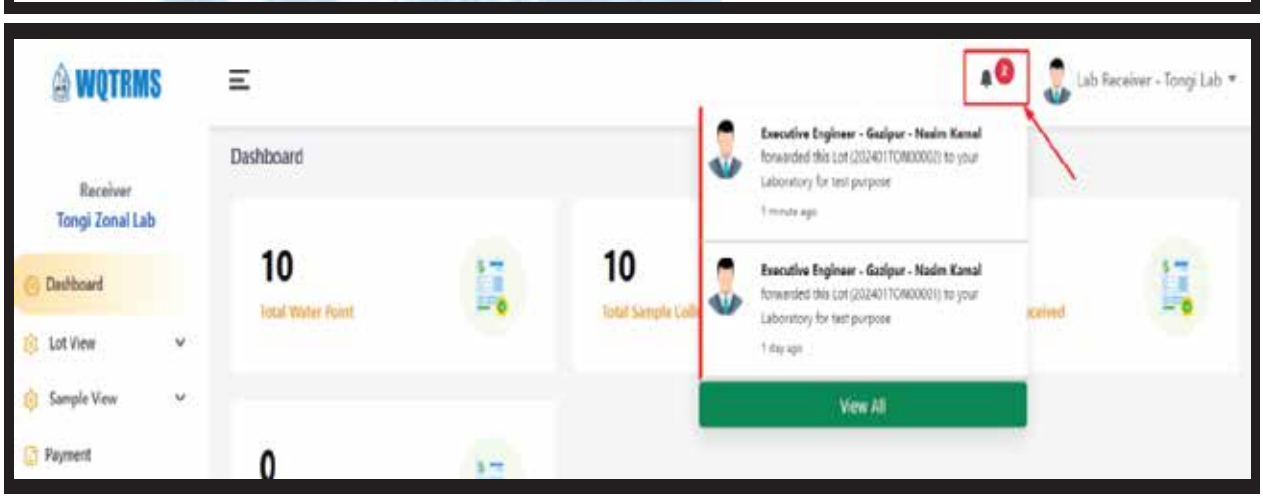




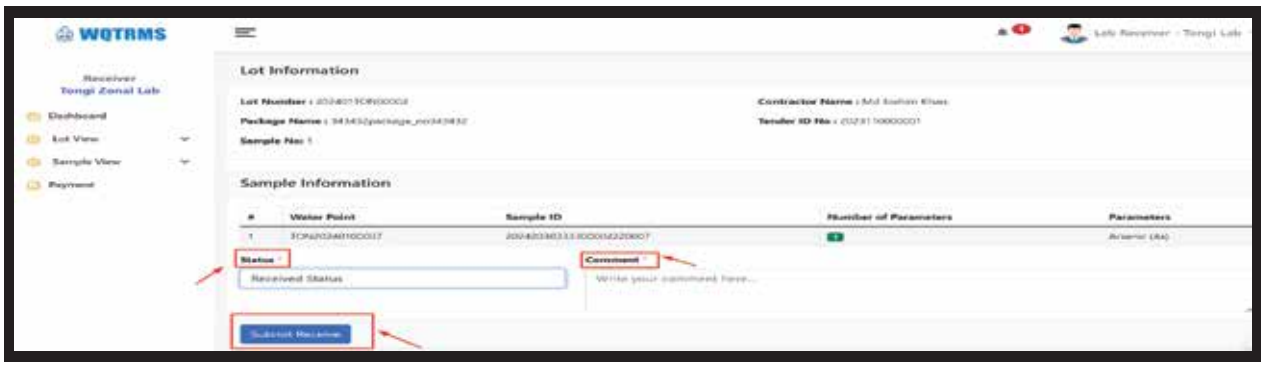
4.To confirm the forward, he has to click the forward button.

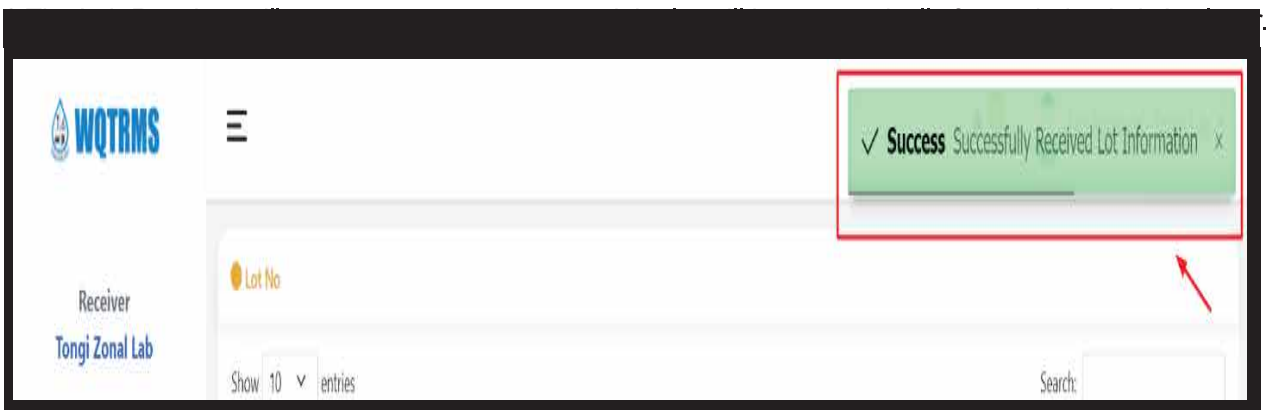


Operation Manual of LAB Receiver



2.The Lab Receiver will get a notification; that the lot is forwarded to them.
3.He can See the Payment Status, Received Status, and Backward to Executive Engineer, View the Lot Samples.
4.To receive the lot Lab Receiver has to click the second option.
5.To receive the lot Lab Receiver has to select the Status by drop-down and make a Comment and finally submit by clicking Submit Receive.

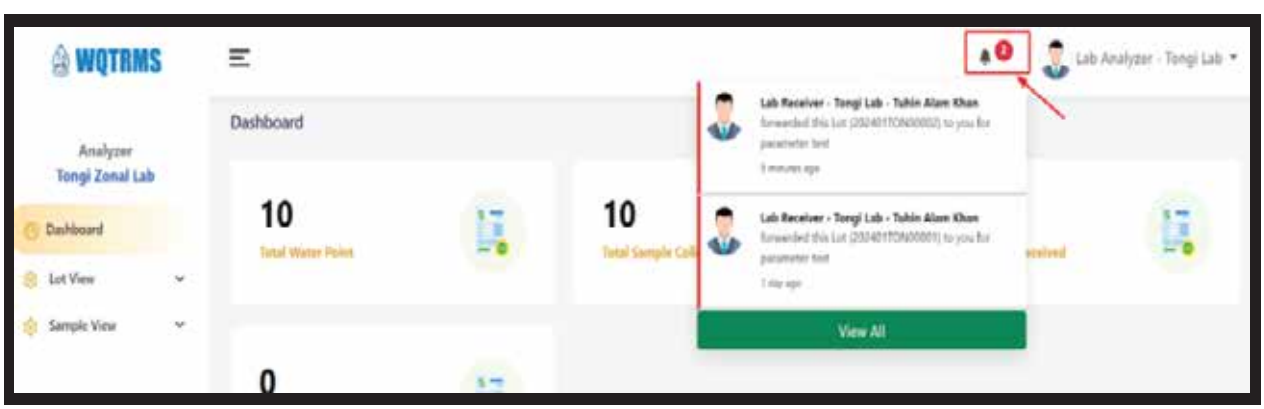




Operation Manual of LAB Analyzer

1. To access WQTRMS, use URL: https://wqtrms.dphe.gov.bd/login

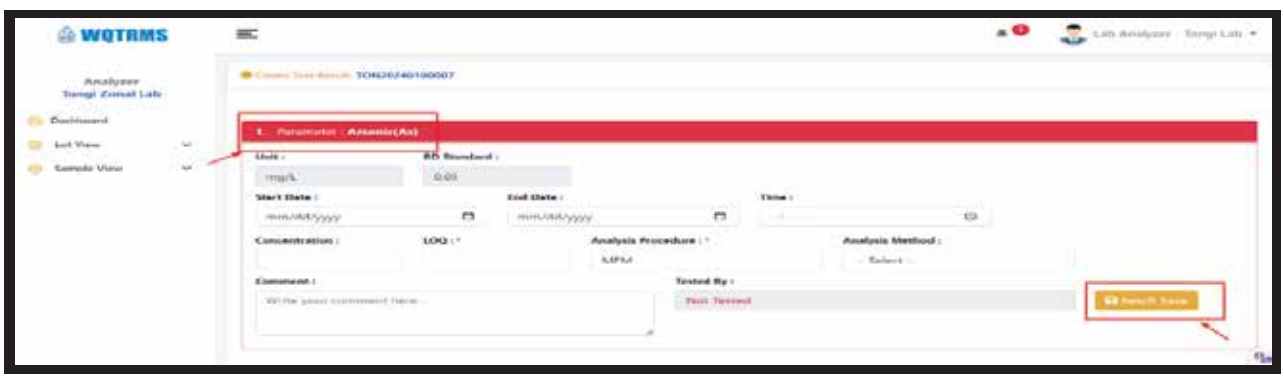
2. The Lab Analyzer will get a notification that the lot is forwarded to them.



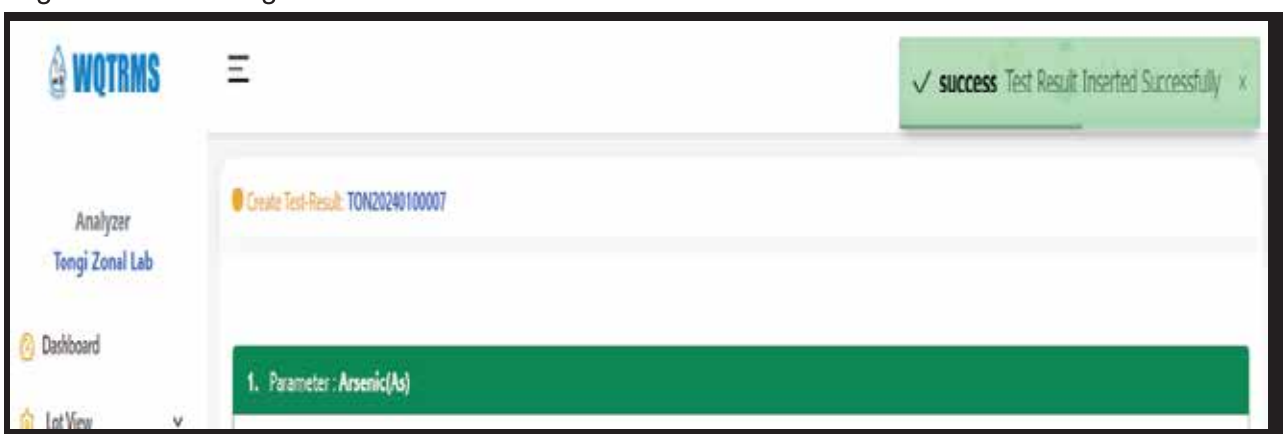
3.Lab Analyzer can see the Payment Status, Received Status and the Lot Samples.

4. In Sample Progress, he will get the Samples. He can view Sample Details and Sample Test.
5. To test the sample, he has to take the View Sample Test.

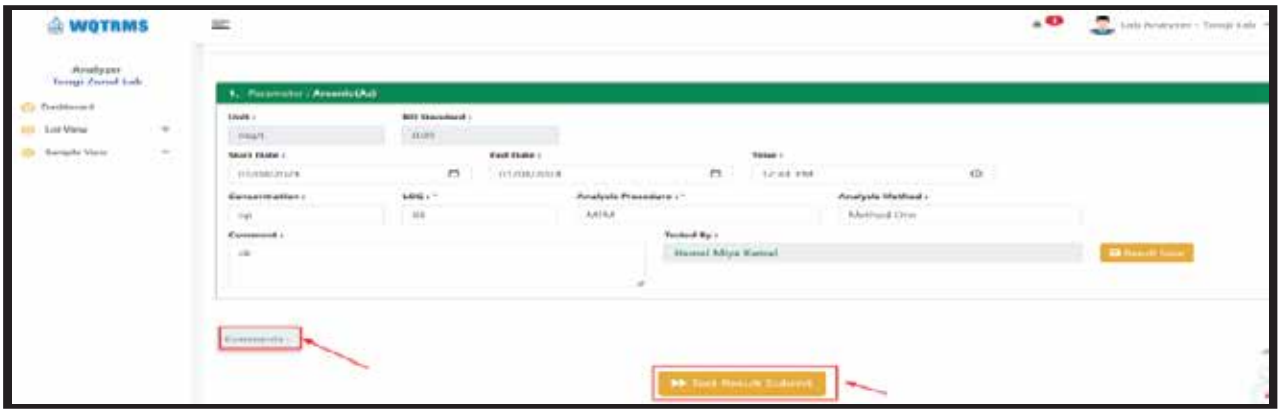
6. Analyzer will get the Parameters that are needed to be tested. In Each Parameter, he/ she has to select the Start Date, End Date, Time, Analysis Procedure, Analysis Method, and Tested By in drop-down. It has to manually enter the Concentration, LOQ and Comment.



7. At last, he/ she has to Save the Result by Result Save option and He/she will get a Success message after submitting the result.



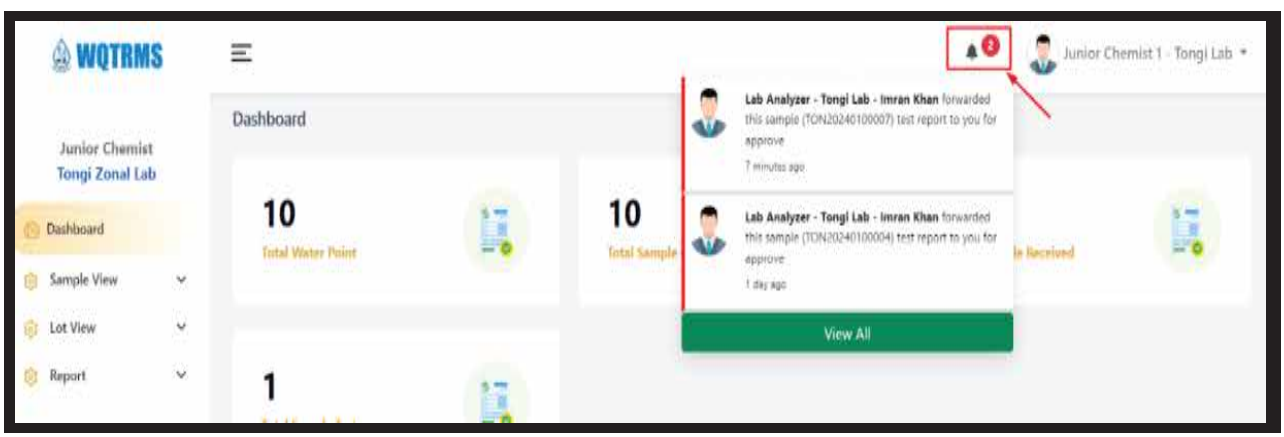
8. After testing the parameters, he will get a Comment option and a Test Result Submit Button.
9. Lab Analyzer will get a success message after submitting the test result.



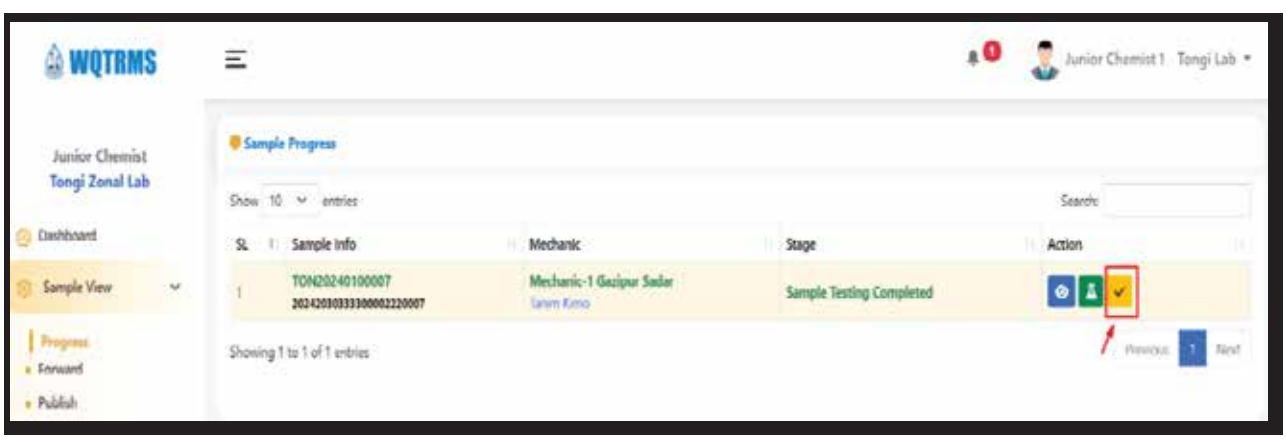
Operation Manual of Chemist (Junior Chemist, Chemist, Senior Chemist, Chief Chemist)

1.To access WQTRMS,Use URL: https://wqtrms.dphe.gov.bd/login

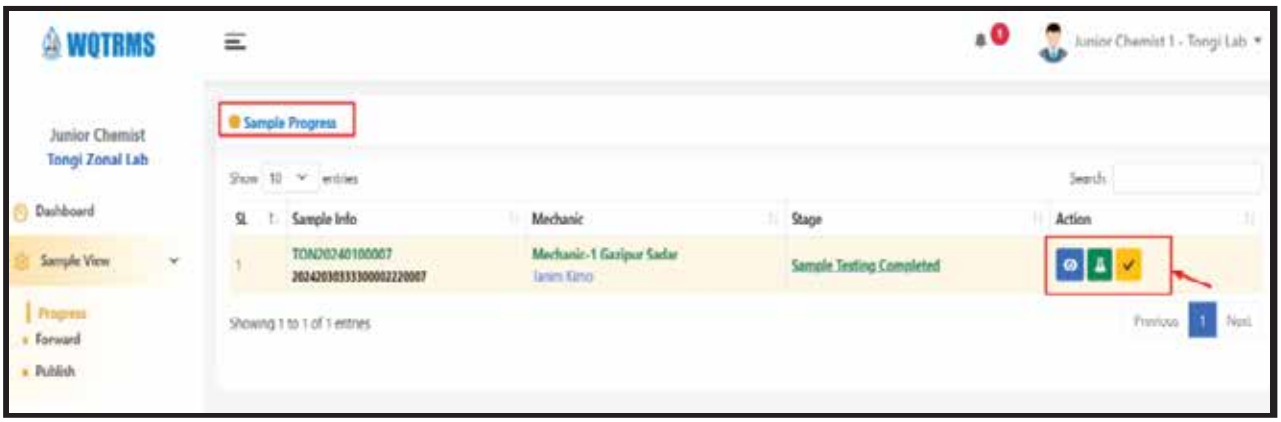
2.The Chemist Panel will get a notification that the lot is forwarded to them.



3.Chemist will get the Sample in Sample Progress. Here he can View Sample Details, Check Sample Test Status and Click for Approval.



4.To approve the sample, he has to click for approval.



5.Here Chemist will get a Status and Date to select and a Comment box to comment.

6.Chemist has to click the Update button to update the Status.

7.Chemist will get a Success Message.

Note: Approval process is same for all chemist. It will sequentially go from the Junior Chemist, Chemist, Senior Chemist, Chief Chemist. Only one Chemist can publish the report according to the Lab Policy.

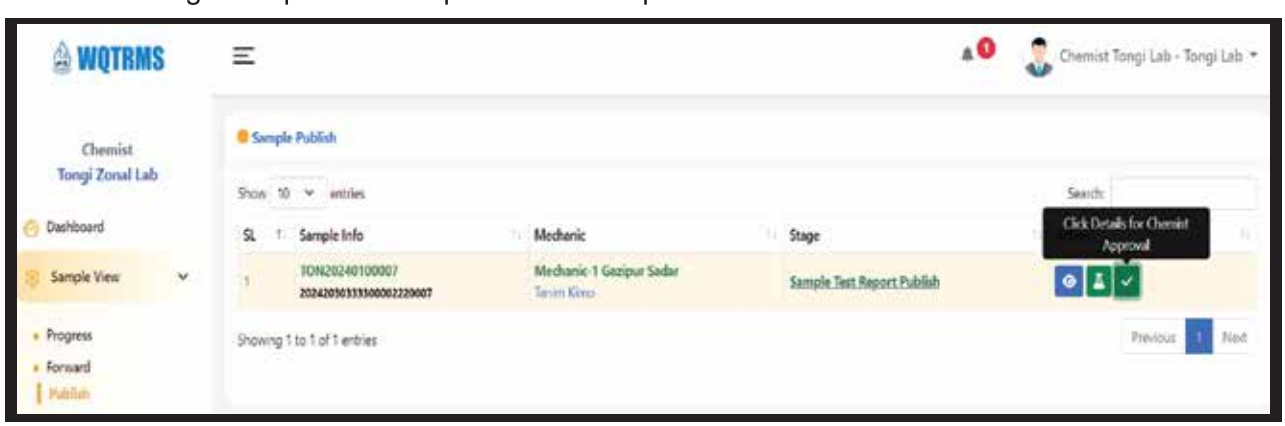
Report Publish:

● To publish the report Chemist will go to the Sample Forward module where he can click to publish the report.

● Chemist will be able to see the Approval from the Lab Authority, he has to select Status and Date. In Comment section he has to write the Recommendation. By clicking Update Button he will be able to generate the report.

● Chemist will get a success message after publishing.

●Chemist will get the published report in the Sample-Publish module.



Eight session

Payment Gateway
Mobile Base Application
Notification Management System
Dynamic Report
Dynamic Dashboard

Eight session

8.1 Topic:

- Payment Gateway
- Mobile Base Application
- Notification Management System
- Dynamic Report
- Dynamic Dashboard

8.2 Objectives of the lesson: Participants can learn the followings at the end of this session –

- Payment Gateway
- Mobile Base Application
- Notification Management System
- Can learn about Dynamic Report
- Can learn about Dynamic Dashboard
- Can learn about the Challenges of the new system

8.3 Duration: 1.00hr

8.4 Training Materials: Whiteboard, whiteboard marker, multimedia screen, duster, and manual.

8.5 Procedures for Conducting Training

SUBJECT	ACTIVITIES
Name and purpose of discussion	● The name of the subject to be discussed must be presented in writing. ● What the participants want to learn from this discussion should be known through questions. ● Pre-written objectives should be presented and participants' expectations should be compared with them.
Discussion	● The topic should be presented through questions. ● Participants should be encouraged to participate in discussions. ● Care must be taken whether questions are presented systematically or not.
Summary of topics discussed	● At the end of the discussion, the entire subject should be discussed.
Assessment	● To assess how much the participants know the subject matter by presenting and answering questions.

8.6.1 Dynamic Report System:

- The proposed system has a dynamic report engine that will generate reports based on
- dynamic data as per clients' requirement
- The system has drag and drop report builder engine to facilitate any kind of user/system report
- The proposed system has an option to generate various reports for analysis
- The proposed system has the functionality to correct or modify the generated report
- Basic reports for different types/levels of user containing no. of sample collected, no. of sample
- tested, office/lab wise sample collection, office/lab wise test result, no. of emergency report, etc.
- The proposed system has the provision for generating different analytical reports based on
- assessments with graphical representations like charts, pies, lines, etc.
- List of services with a price/ center with address/Users with role
- Division/District/Upazila-wise client list
- Date to Date bill collection reports Detail/SUM
- Date to Date Division/District/Upazila wise test report detail/SUM

8.6.2 Dynamic Dashboard:

The dashboard will contain statistical data on different features of the system in different interactive formats like indicator-based graphical charts, tables with figure/summary data, etc., which are easy to understand at a glance.

The Dashboard can present dynamic data of sample testing such as the number of enrolled, number of completed, number of not collected, results distribution among the applicant's types, etc. It can present a zoning map of metro areas, municipalities, growth centers, rural areas, and the whole country based on clustering and Map for the risk level pattern of the water points. The system will display an office-based dashboard like

- Dashboard for Operating Office-Upazila/Union, District Office, Division Department/HQ

8.6.3 Challenges of the proposed system:

8.6.4 Notification Management System:

Notification Management helps you ensure the accurate delivery of important information to the right person at the right time, without depending on employees to take action. By using Notification Management, you can notify customers immediately regarding order confirmations, delayed deliveries, or changing specifications.

- The system has provision for Notification through SMS, e-mail and system
- The system or admin user will be able to configure notification media/content
- Able to configure notification template
- The proposed system has a provision to keep a log of every notification generated or sent through notification media
- Notification for citizen application status, history progress, etc

8.6.5 Payment Gateway Integration:

The gateway is the beginning and end of the transaction. The customer will enter their credit card information and receive an approval or denial of the transaction. The payment processor moves the information between the customer's bank and the merchant bank. Every transaction processed online needs both.

To integrate payment gateway for online payment collection and also payment settlement facilities for respective offices with notification and detailed reports. Notify after payment through SMS and e-mail.

8.6.6 Mobile Application:

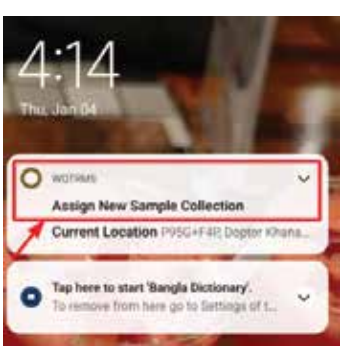
A mobile app (or mobile application) is a software application developed specifically for use on small, wireless computing devices, such as smartphones and tablets, rather than desktop or laptop computers.

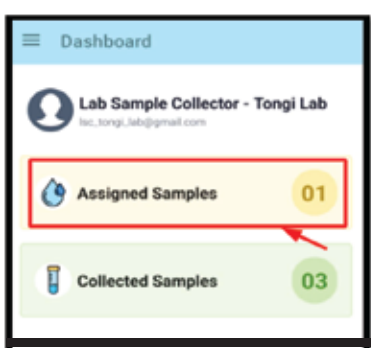
Uses of Mobile Application in WQTRM System

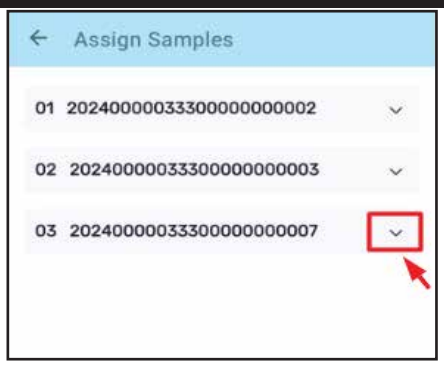
- Development of Mobile application for sample collection, lab result entry, view and download report
- The mobile app can download the citizen application to mobile local storage while connected to the server with the internet.
- The mobile app can accept input of sample test result data offline and synchronize the data with the server when the mobile is connected to the internet later.
- The mobile app will accept sample test result data either online or offline only if GPS is on. The mobile app can process water point GPS information from the picture taken during ample testing.

10. Mobile Apps for Mechanics & Lab Sample Collector

1.To access WQTRMS Mobile Apps, please open our provided APK or download the Mobile Application from the web link https://wqtrms.dphe.gov.bd/login






Assign Samples
01 20240000033300000000002
02 20240000033300000000003
03 20240000033300000000007

Assign Samples
01 20240000033300000000011
Sample ID : TON20240100011
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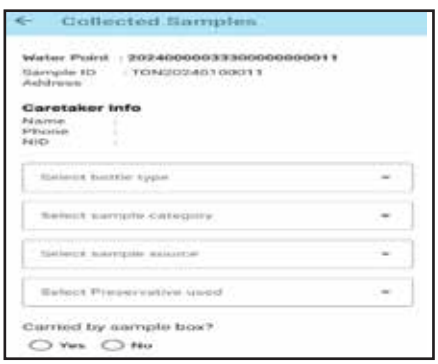
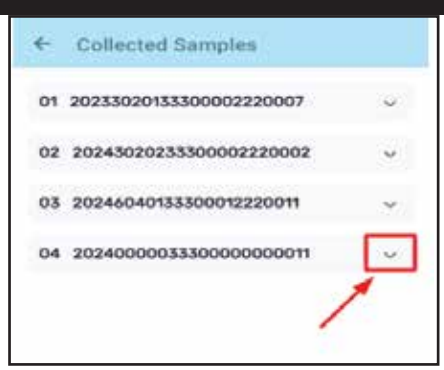
Name
Phone
NID
COLLECT


Collected Samples
Caretaker Info
Carried by sample box?
Yes
No

Retake Image
Save

Dashboard
Lab Sample Collector - Tongi Lab
Assigned Samples
01
Collected Samples
04


Collected Samples
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02 20243020233300002220002
03 20246040133300012220011
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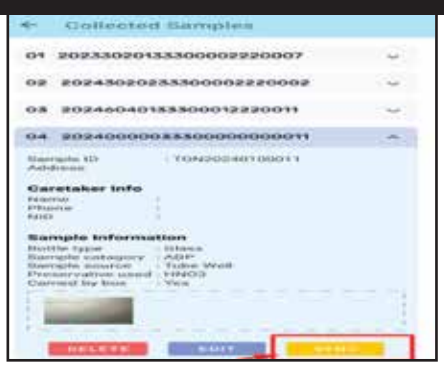

Collected Samples
Caretaker Info
Sample Information

Sample Collected
Congratulation !

Operation Manual of Report Management System

1.To access WQTRMS, use URL: https://wqtrms.dphe.gov.bd/login

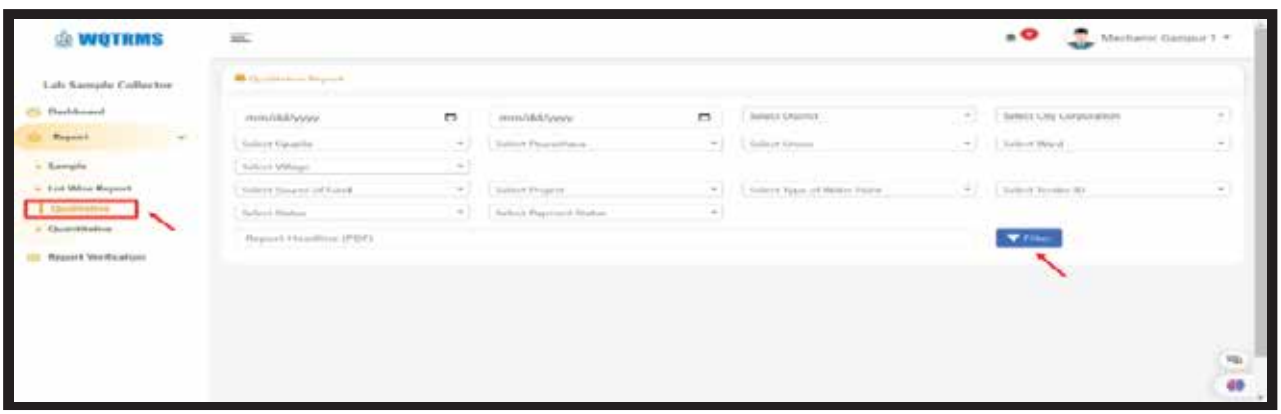
2. In the Dashboard authority can see the Sample Report, Lot Report, Qualitative and Quantitative Report.

3. In the Report Section from the Sample module, he can get Sample Wise Report by Filtering with Sample ID, Water Point ID, Caretaker Name, Caretaker Phone Number, and Caretaker NID.

4. n the Lot Wise Report, he will get the report Lot wise and can download the report.

5. Authority can download and print the report.

6. Authority can get the qualitative report by filtering with different criteria. Such as Date, District City Corporation, Upazila, Pourashava, Union, Ward, Village, Source of Fund, Project, Type of Water Point, Tender ID, Sample Status, Payment Status, Report Headline.



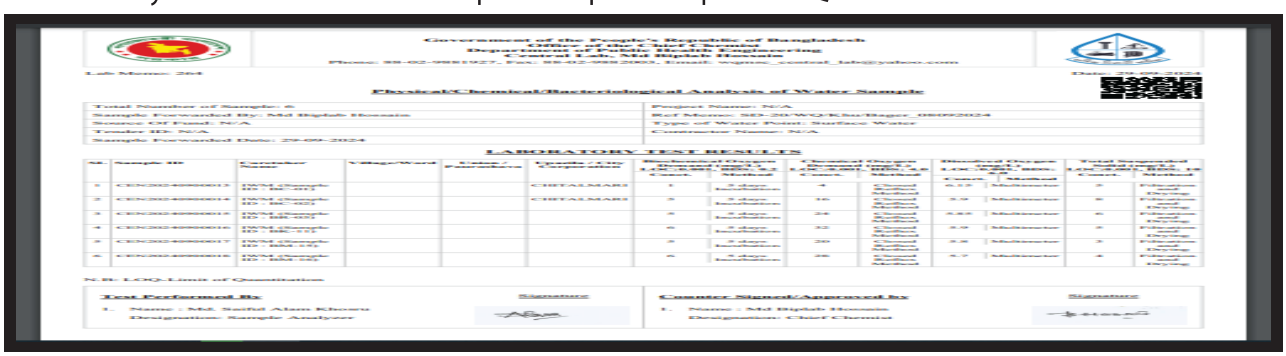
7. Authority can Export the qualitative report and it will be downloaded in excel file

8. Authority can select item for PDF and select PDF layout.

9. Then authority will be able to print and download the report.

10. Authority can download report in PDF with QR code and also in excel file as per parameter.

11. From the Report Verification module, he can enter a Report Memo number and verify. He can also download the report.

12. Authority can also download the report and print the pdf with QR Code.

13. Authority can also download the report and print the pdf with QR Code.