

WQDas

Water Quality Data Acquisition Solution

User Manual

Draft

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Introduction

The Water Quality Data Acquisition Solution (WQDas) is an all-encompassing platform tailored for water quality monitoring initiatives. It streamlines the management of diverse elements, including water chemistry, physical attributes, chemical properties, habitat evaluations, biological assessments, and fish tissue studies, among others. As a centralized hub, WQDas empowers organizations to oversee their projects from start to finish within a single, integrated platform.

Key Features of WQDas:

WQDas boasts an array of essential features, such as project tracking, activities tracking, land owner's permission to enter the location tracking, staff training management, and equipment monitoring for each project. Its dashboard aggregates organizational data into a secure repository, ensuring easy access and data integrity. With data visualization tools like charts and graphs, the dashboard delivers a comprehensive overview of project performance.

By presenting all project information on a single screen accessible to team members, WQDas enhances transparency and collaboration throughout the project lifecycle. It effectively monitors activities to ensure smooth operations from inception to completion.

Centralizing data improves accessibility, accuracy, and reliability by creating a single source of truth. This approach supports data portability and standardizes storage and formatting practices across the organization, reducing redundancy and minimizing errors. Real-time access to a unified dataset guarantees that all stakeholders work with consistent information and adhere to standardized protocols.

Moreover, WQDas streamlines the management and design of reporting and analysis protocols, promoting consistency in naming conventions and methodologies across all projects. This adherence to standardized practices aligns with organizational preferences and boosts efficiency in data management and analysis.

Login to WQDas

Please log in to the WQDas platform at www.wqdas.com using the credentials provided by your organization's admin. If you experience any issues, reach out to your admin or email Admin@techzonemd.com. First-time users should use the reset option to obtain a new password after confirming their account creation with the project manager for their organization.

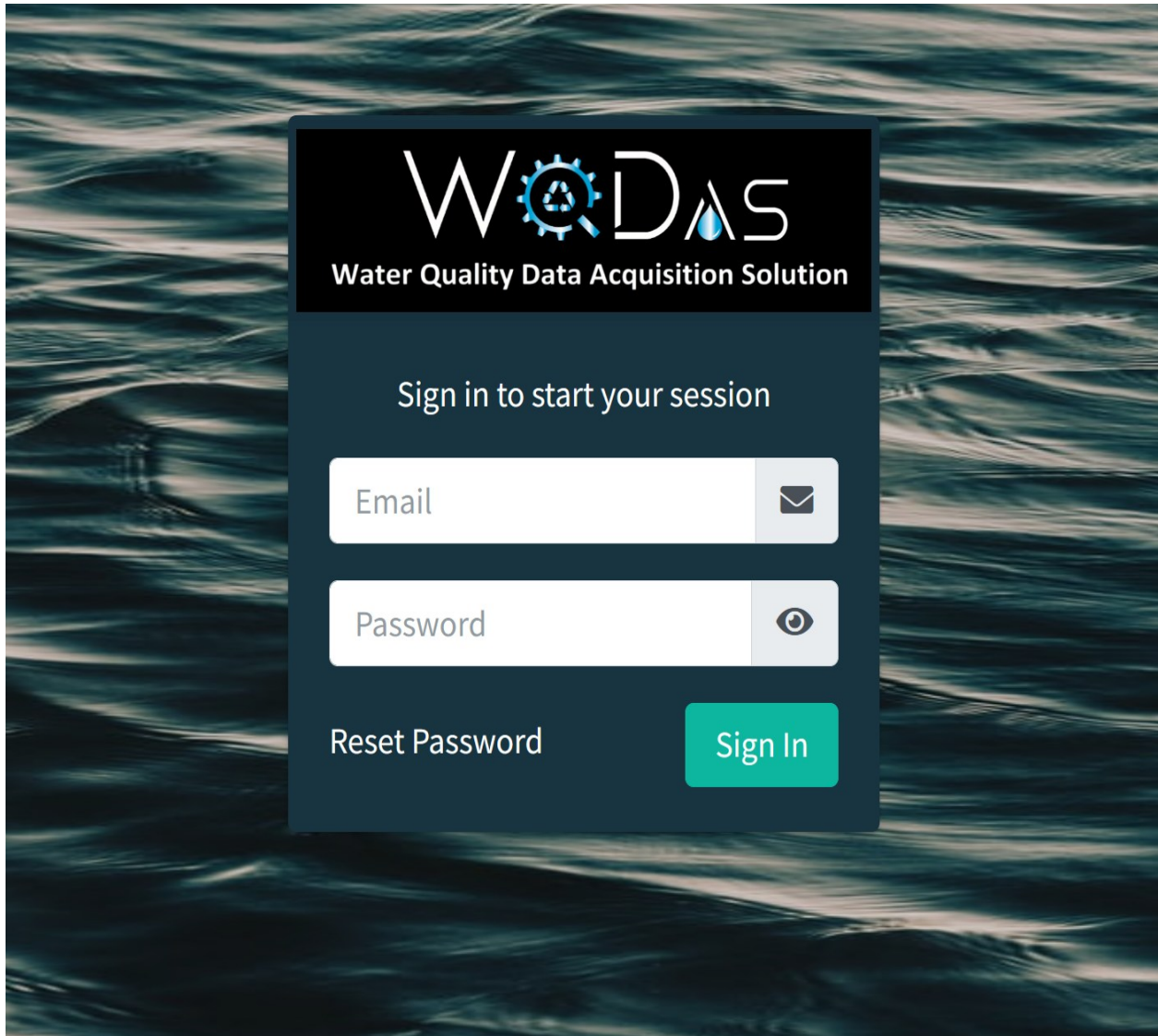


Figure 1 Login screen

Project Catalog view

Click on the "Projects" tab in the main menu to access a centralized list of all projects conducted by your organization. This overview helps keep track of important details, including QAPP status, project manager, project duration, funding sources and the grants associated with each project. Users can quickly review metadata such as the availability of SOPs for team members, ensuring everyone has access to necessary documentation.

Figure 2 Project Catalog

To view project details, click the green "+" sign at the beginning of each row in the Projects Catalog.

Figure 3 Project Details

Users can view all details about the project, including sections, sampling locations, sampling plans, monitoring characteristics, and the schedule in one centralized solution.

Project Catalog and Setup for a New Project +

Organization: Project: From Date: To Date: Years: Apply Filter Clear

Habitat Assessment Project	09-17-2024	12-31-2030	319 grant	Gluth, Edwin	River Keepers	Local RiverKeeper	EPA	Not Approved Yet	No	-	Yes		
Non Tidal 2013 -2023	01-01-2013	12-31-2023	General Funds	Andy, Nathan	River Keepers	Local RiverKeeper	Chesapeake Bay	Not Approved Yet	No	-	Yes		

Project Location (highlighted)

Location Name	Location Type	Project Section	Watershed	Datum	Country	State	Latitude	Longitude	PrivateYN
WWW-GWN-46	Tidal	Gwynns Falls Section	Gwynns Falls	NAD27	United States of America	Maryland	39.431953	-76.78062	No
WWW-GWN-48	Tidal	Gwynns Falls Section	Gwynns Falls	NAD27	United States of America	Maryland	39.404778	-76.77911	No
WWW-GWN-49	Tidal	Gwynns Falls Section	Gwynns Falls	NAD27	United States of America	Maryland	39.388218	-76.78652	No

Figure 4 Project Location

Project Catalog and Setup for a New Project +

Organization: Project: From Date: To Date: Years: Apply Filter Clear

Habitat Assessment Project	09-17-2024	12-31-2030	319 grant	Gluth, Edwin	River Keepers	Local RiverKeeper	EPA	Not Approved Yet	No	-	Yes		
Non Tidal 2013 -2023	01-01-2013	12-31-2023	General Funds	Andy, Nathan	River Keepers	Local RiverKeeper	Chesapeake Bay	Not Approved Yet	No	-	Yes		

Project Characteristic (highlighted)

Project	Characteristics	Min Value	Max Value	Unit	Common Name	Chr Monitor Type	Media	Sub Media	Sample Faraction	Sample Study Name	Method Speciation
Non Tidal 2013 -2023	pH	6	9	None	pH	Field	Water	Water		Field Measurement	
Non Tidal 2013 -2023	Nitrate + Nitrite	0.001	2	mg/l		Laboratory	Water	Water	Dissolved	Water Chemistry	As N
Non Tidal 2013 -2023	Total Nitrogen, mixed forms	0.001	20	mg/l		Laboratory	Water	Water	Total	Water Chemistry	As N

Figure 5 Project Characteristic

Users can view the "Sample Study" details on this tab, including the type of sampling method and the containers that will be used for the project.

The screenshot shows the 'Project Catalog and Setup for a New Project' interface. At the top, there is a navigation bar with various menu items like 'Monitoring Project', 'Graph', 'Maps and Calendar', etc. Below the navigation bar, there are search and filter options for 'Organization', 'Project', 'From Date', and 'To Date'. A table lists several projects, including 'BI-BI Score Project', 'Continuous Logger Project', 'FIBI Score project', and 'Fish Tissue Project'. The 'Project Sample Study' section is highlighted with a red box, showing a table with columns: 'Sample Study', 'Sample Holding Period', 'Sample Hold P r Unit Name', and 'Collection Container'. The data rows are: Fish Tissue (365 days), Water Chemistry (28 days), Observations, and Field Measurement.

Name	Start Date	End Date	Grant Name	Manager	Organization	Administration	QA/PF Approving Organization	Private project	SOP	Active	Action
BI-BI Score Project	09-02-2024	12-14-2030	319 grant	Gluth, Edwin	River Keepers	Local RiverKeeper	EPA Approved	No	View	Yes	[Icons]
Continuous Logger Project	01-01-2022	12-31-2025	319 grant	Gluth, Edwin	River Keepers	Local RiverKeeper	EPA Not Approved Yet	No	View	Yes	[Icons]
FIBI Score project	01-02-2023	12-14-2030	General Funds	Gluth, Edwin	River Keepers	Local RiverKeeper	EPA Approved	No	View	Yes	[Icons]
Fish Tissue Project	05-01-2024	12-31-2026	General Funds	Gluth, Edwin	River Keepers	Local RiverKeeper	EPA Not Approved Yet	No	View	Yes	[Icons]

Sample Study	Sample Holding Period	Sample Hold P r Unit Name	Collection Container
Fish Tissue	365	days	
Water Chemistry	28	days	
Observations			
Field Measurement			

Figure 6 Project Sample Study

Users can view the sampling frequency for each site within the sample study, along with the equipment used at each location during the sampling process for the project.

The screenshot shows the 'Project Catalog and Setup for a New Project' interface, similar to Figure 6. The 'Project Location Study Schedule' section is highlighted with a red box, showing a table with columns: 'Project Location', 'Sample Study', 'Collection Container', 'Collection Equipment', 'Profile', 'Number Of Sample', and 'Collection Frequency'. The data rows are: WWW-PATMH-22 (Fish Tissue, Plastic Bucket, Fish Shocker, No, 5, Once, Seasonal Only), WWW-PATMH-22 (Water Chemistry, Glass Vial, Grab Sample, No, 1, Once, Seasonal Only), WWW-PATMH-22 (Field Measurement, Glass Vial, Grab Sample, No, 1, Once, Seasonal Only), DRAGON WOATS (Fish Tissue, Plastic Bucket, Fish Shocker, No, 5, Once, Seasonal Only), DRAGON WOATS (Water Chemistry, Glass Vial, Grab Sample, No, 1, Once, Seasonal Only), and DRAGON WOATS (Field Measurement, Glass Vial, Grab Sample, No, 1, Once, Seasonal Only).

Project Location	Sample Study	Collection Container	Collection Equipment	Profile	Number Of Sample	Collection Frequency
WWW-PATMH-22	Fish Tissue	Plastic Bucket	Fish Shocker	No	5	Once, Seasonal Only
WWW-PATMH-22	Water Chemistry	Glass Vial	Grab Sample	No	1	Once, Seasonal Only
WWW-PATMH-22	Field Measurement	Glass Vial	Grab Sample	No	1	Once, Seasonal Only
DRAGON WOATS	Fish Tissue	Plastic Bucket	Fish Shocker	No	5	Once, Seasonal Only
DRAGON WOATS	Water Chemistry	Glass Vial	Grab Sample	No	1	Once, Seasonal Only
DRAGON WOATS	Field Measurement	Glass Vial	Grab Sample	No	1	Once, Seasonal Only

Figure 7 Project Sampling Schedule

Users can view the measuring units associated with each sample study for a project.

The screenshot shows the 'Project Catalog and Setup for a New Project' interface. At the top, there are navigation tabs: Monitoring Project, Graph, Maps and Calendar, Report, Quality Assurance, Data Entry, Manage Inventory, Manage Instrument, MetaData, Administration, Index Calculation, Threshold, and Permit Project. Below the navigation is a search bar with 'Project Catalog and Setup for a New Project' and a '+' icon.

The main content area has several filters: Organization (Select Organization), Project (Select Project Name), From Date (10/08/2023), To Date (10/08/2024), and Years. There are 'Apply Filter' and 'Clear' buttons.

Below the filters is a table of projects. The 'Fish Tissue Project' is highlighted in blue. Below this is a sub-table for 'Project Units' with the following columns: Project Name, Project Location, Project Characteristic, Project Sample Study, Project Location Study Schedule, Unit Name, Unit Type, Unit StartDate, Unit EndDate, and Comment.

Project Name	Project Location	Project Characteristic	Project Sample Study	Project Location Study Schedule	Unit Name	Unit Type	Unit StartDate	Unit EndDate	Comment
Fish Tissue Project		Water Chemistry			Sample Depth	ft	2024-09-01		
Fish Tissue Project		Field Measurement			Sample Depth	ft	2024-09-01		
Fish Tissue Project		Observations			Percentage	%	2024-09-17		
Fish Tissue Project		Field Measurement			Stream Width	ft	2024-09-17		
Fish Tissue Project		Field Measurement			Stream Length	ft	2024-09-17		
Fish Tissue Project		Field Measurement			Water Velocity	cm/sec	2024-09-17		
Fish Tissue Project		Fish Tissue			Fish Length	cm	2024-09-17		

Figure 8 Project Units

The WQDas will generate a Quality Assurance Project Plan (QAPP) for each individual project during the “Project” setup process. For each individual EPA project there is an option to upload Standard Operating Procedures (SOP) as documents, which can be included in the QAPP. To generate the QAPP, click the “PDF” action button, which allows you to save the document. This will open in a new window for your convenience.

The screenshot shows the 'Project Catalog and Setup for a New Project' interface. At the top, there are navigation tabs: Monitoring Project, Graph, Maps and Calendar, Report, Quality Assurance, Data Entry, Manage Inventory, Manage Instrument, MetaData, Administration, Index Calculation, Threshold, and Permit Project. Below the navigation is a search bar with 'Project Catalog and Setup for a New Project' and a '+' icon.

The main content area has several filters: Organization (Select Organization), Project (Select Project Name), From Date (10/08/2023), To Date (10/08/2024), and Years. There are 'Apply Filter' and 'Clear' buttons.

Below the filters is a table of projects. The 'Fish Tissue Project' is highlighted in blue. Below this is a sub-table for 'Project Units' with the following columns: Name, Start Date, End Date, Grant Name, Manager, Organization, Administration, QAPP Approving Organization, Private project, SOP, Active, and Action.

Name	Start Date	End Date	Grant Name	Manager	Organization	Administration	QAPP Approving Organization	Private project	SOP	Active	Action
BI-BI Score Project	09-02-2024	12-14-2030	319 grant	Gluth, Edwin	River Keepers	Local RiverKeeper	EPA Approved	No	View	Yes	PDF
Continuous Logger Project	01-01-2022	12-31-2025	319 grant	Gluth, Edwin	River Keepers	Local RiverKeeper	EPA Not Approved Yet	No	View	Yes	PDF
FIBI Score project	01-02-2023	12-14-2030	General Funds	Gluth, Edwin	River Keepers	Local RiverKeeper	EPA Approved	No	View	Yes	PDF
Fish Tissue Project	05-01-2024	12-31-2026	General Funds	Gluth, Edwin	River Keepers	Local RiverKeeper	EPA Not Approved Yet	No	View	Yes	PDF
Habitat Assessment Project	09-17-2024	12-31-2030	319 grant	Gluth, Edwin	River Keepers	Local RiverKeeper	EPA Not Approved Yet	No	View	Yes	PDF
Non Tidal 2013 -2023	01-01-2013	12-31-2023	General Funds	Andy, Nathan	River Keepers	Local RiverKeeper	Chesapeake Bay Not Approved Yet	No	View	Yes	PDF
Testing Project	09-25-2024	12-31-2026	General Funds	Gluth, Edwin	River Keepers	Local RiverKeeper	EPA Not Approved Yet	No	View	Yes	PDF
Tidal Data 2009-2023	01-01-2009	12-31-2023	319 grant	Andy, Nathan	River Keepers	Local RiverKeeper	Chesapeake Monitoring Cooperative Approved	No	View	Yes	PDF
Tidal Profiles 2013-2023	01-01-2013	12-31-2023	General Funds	Gluth, Edwin	River Keepers	Local RiverKeeper	Chesapeake Bay Not Approved Yet	No	View	Yes	PDF

Figure 9 How to create a QAPP, Click on PDF button

Starting a New Project:

For any projects, all Create, Update, and Delete (CUD) options are restricted to the Organization Admin and Administration Lead, while all other roles have Read-Only access.

Requirements Before Starting a New Project:

Add Location Information: Ensure all location details are entered into the “Master Location” table under the “Metadata” menu.

Assign Inventories: Make sure that all necessary equipment and inventories are assigned to field staff.

Prepare Parameters/Characteristics List: Have a ready list of parameters and characteristics, including Units, Minimum and maximum acceptable values, Indication of whether values are collected in the field or received from lab analyses.

Before creating a new project, it is essential to populate the “Location Master” tab with all relevant location information to assign these locations to the project. This allows for reusing locations across multiple projects, as the same location can be assigned to many projects. Users can add new data by clicking the “+” sign in the upper right corner.

Create a Location in Location Master table

Ensure that all details for each location are included in the master table. Key information should encompass: Location Type, watershed, Latitude, Longitude, state etc. Additional relevant attributes such as land use, access points, and any specific notes regarding environmental conditions or restrictions.

This comprehensive data will facilitate effective project planning and management.

Figure 10 Add a new Location into Location Master table.

Users can view a comprehensive list of all locations utilized across various projects. This serves as the master list of all sampling locations used by the organization at any given time.

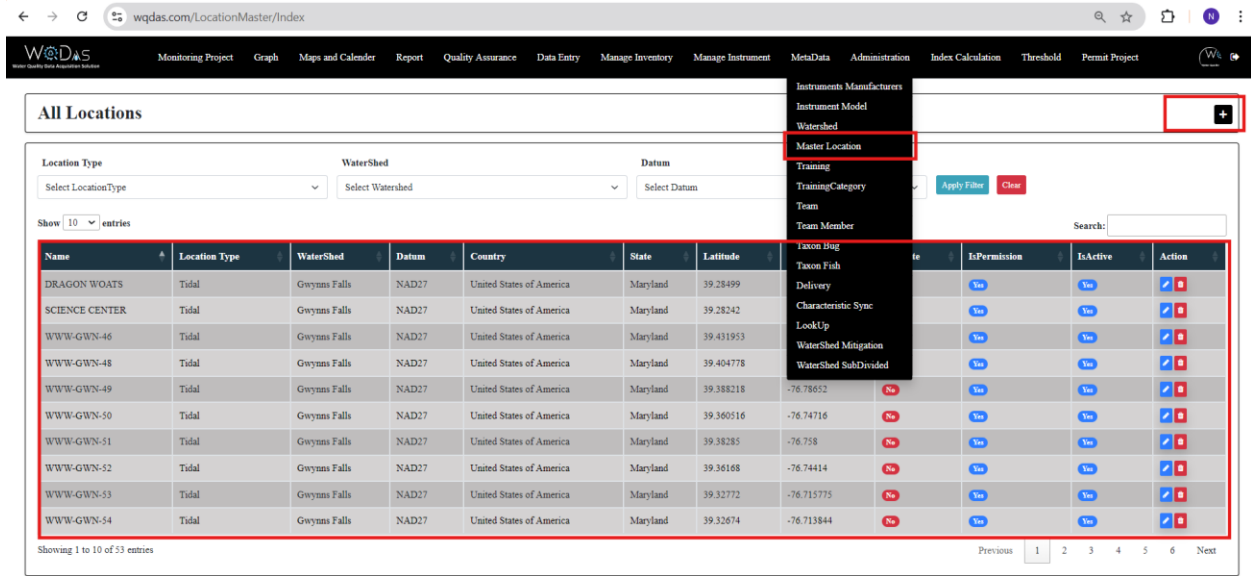


Figure 11 List of all the locations in "Master Location"

Landowner's Permission Tracking

Coming soon:

Project managers can monitor the landowner's permission status for each location by clicking on the "Permission" tab in the Location table. If a location is on private land requiring permission, users can check whether the landowner has granted access to the team.

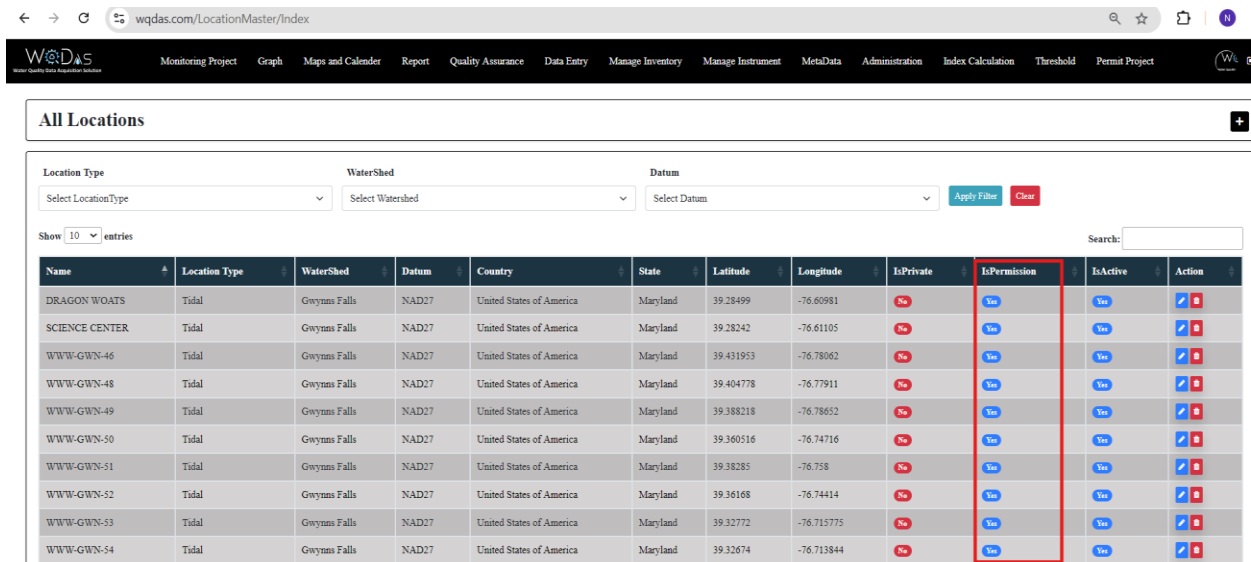


Figure 12 Checking to see if you have permission to access this location.

All Locations on the Map

Users can view all locations on the map, presented as clusters for easier navigation and analysis.

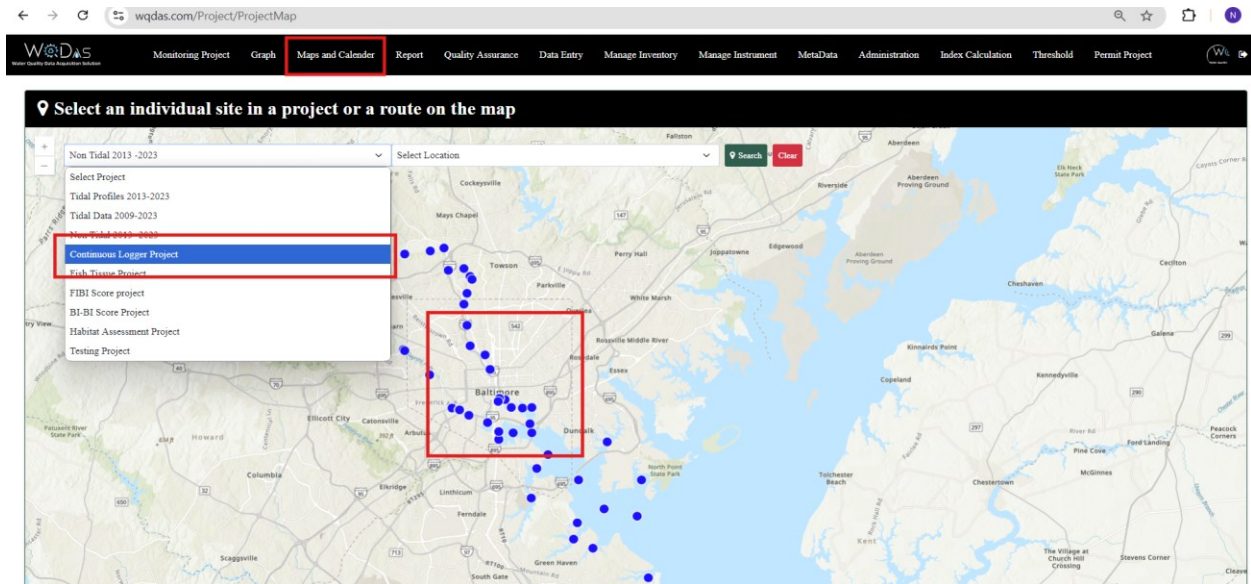


Figure 13 Map with All the locations

Creating a New Project

Before initiating a new project, the Project Manager must verify that all locations are included in the "Location Master" table. Additionally, field staff or those responsible for data collection should have the necessary equipment assigned for the process. Each team member must also be assigned an appropriate role to ensure the project's organizational structure is maintained. After that the project manager can start filling all the fields in this screen.

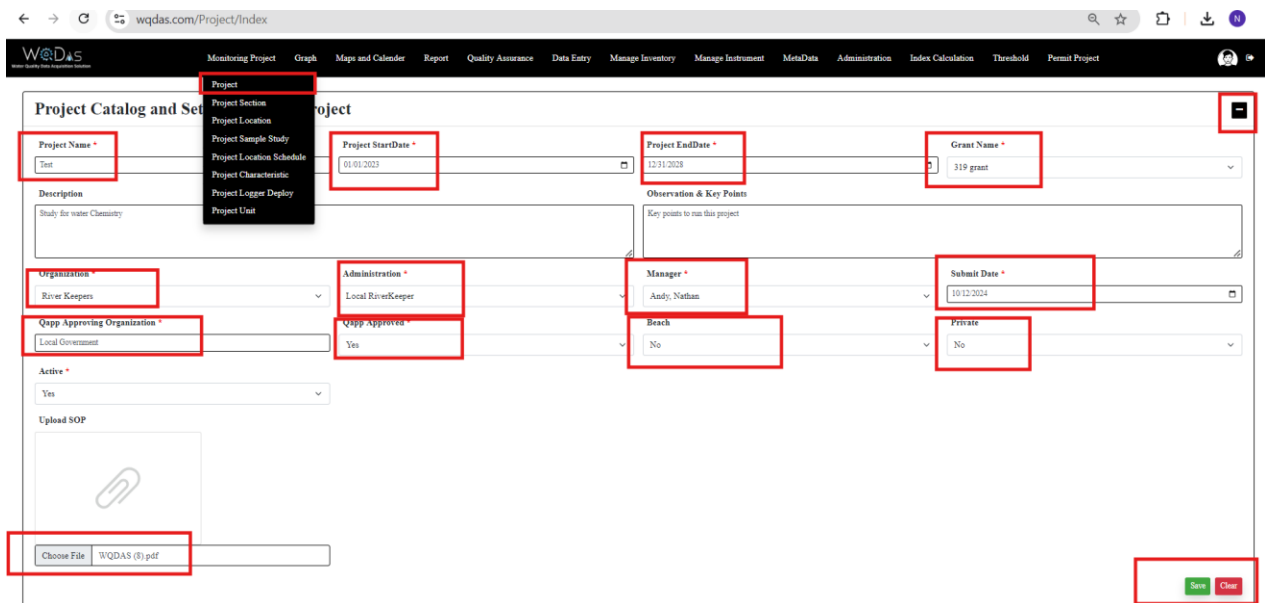


Figure 14 Create a new project

Create Project Sections

For each project, the Project Manager will outline all sections corresponding to various monitoring locations. This structure enables project managers to assign each section to a specific team. Sections consist of a group of locations within a designated area. These sections can help to run a few reports and see trends in a specific section. To add new entries, use the “+” sign in the top right corner.

Project Name	Section Name	Description	Team	Active	Action
BI-BI Score Project	Piedmont section	Piedmont section	Team A	Yes	[edit] [delete]
BI-BI Score Project	Costal Section		Team A	Yes	[edit] [delete]
BI-BI Score Project	Highland Section		Team A	Yes	[edit] [delete]
Continuous Logger Project	East Logger Section		Team A	Yes	[edit] [delete]
EBR Score Project	Piedmont EBR Section		Team A	Yes	[edit] [delete]

Figure 15 Project Section

Create Project Location Group

The project manager will designate sampling locations for each project, utilizing metadata already available in the "Location Master Table," which contains all essential details. In this section, the project manager will outline how team members can access these locations and specify the types of samples to be collected.

Team members can collect either a “Simple” sample, taken from a specific location, or a “Composite” sample, which combines samples gathered from multiple locations. For more information on additional locations for composite samples, click the “i” in the Detail column.

To add new entries, use the “+” sign in the top right corner.

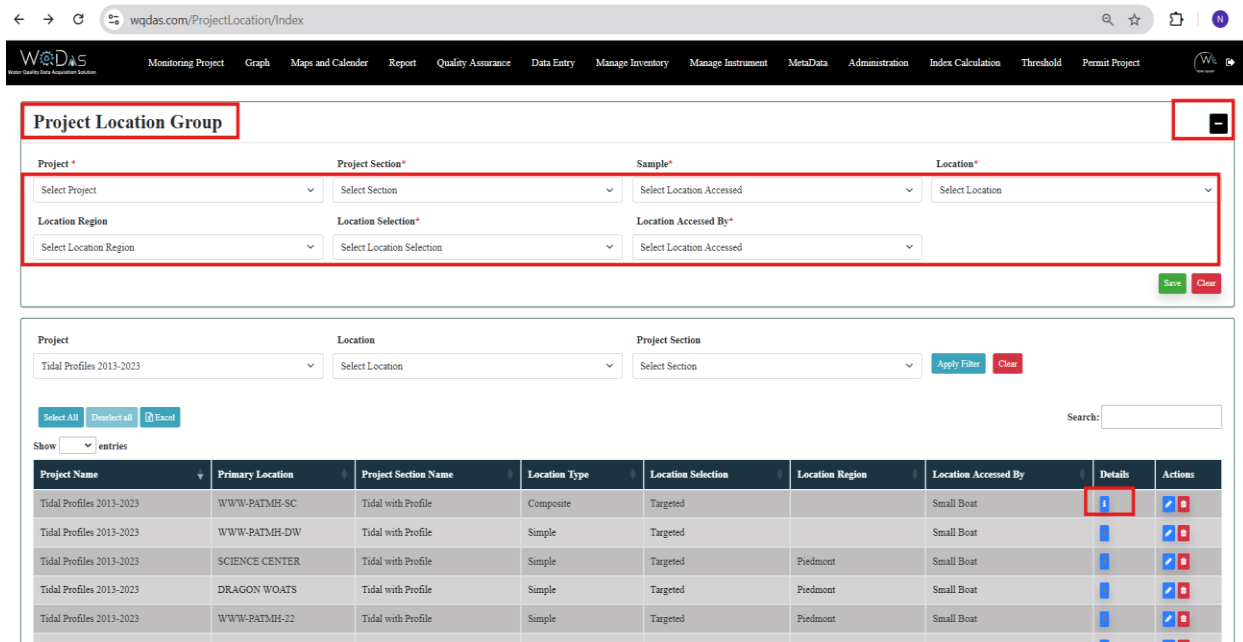


Figure 16 Project Location setup

Designing a Sample Study Plan

The project manager will define the sample study design by selecting options from a dropdown list for samples collected during fieldwork or various section project activities. This section will outline all sampling plans necessary for populating the relevant field sheets. Examples of these plans include Observations, Field Measurements, Water Chemistry, Chlorophyll, Bacteria, Sediment, Fish Tissue, Metals, Ion Matrix, Nutrients, BIBI Scores, FIBI Scores, Continuous Logger, Stream Flow, Habitat Assessment, Spring Index Period, Faunal Data, Vernal Pool, and Salamander Data.

For any plan involving field staff collecting samples for lab analysis, it's essential to add holding times to track each sample. Specifically, for Water Chemistry, Chlorophyll, Bacteria, Sediment, Fish Tissue, Metals, Ion Matrix, and Nutrients sampling, establishing a holding time allows the project manager to generate reports assessing whether all data was analyzed within the required timeframe.

**This section must be completed before adding "Project Characteristics" to any project.*

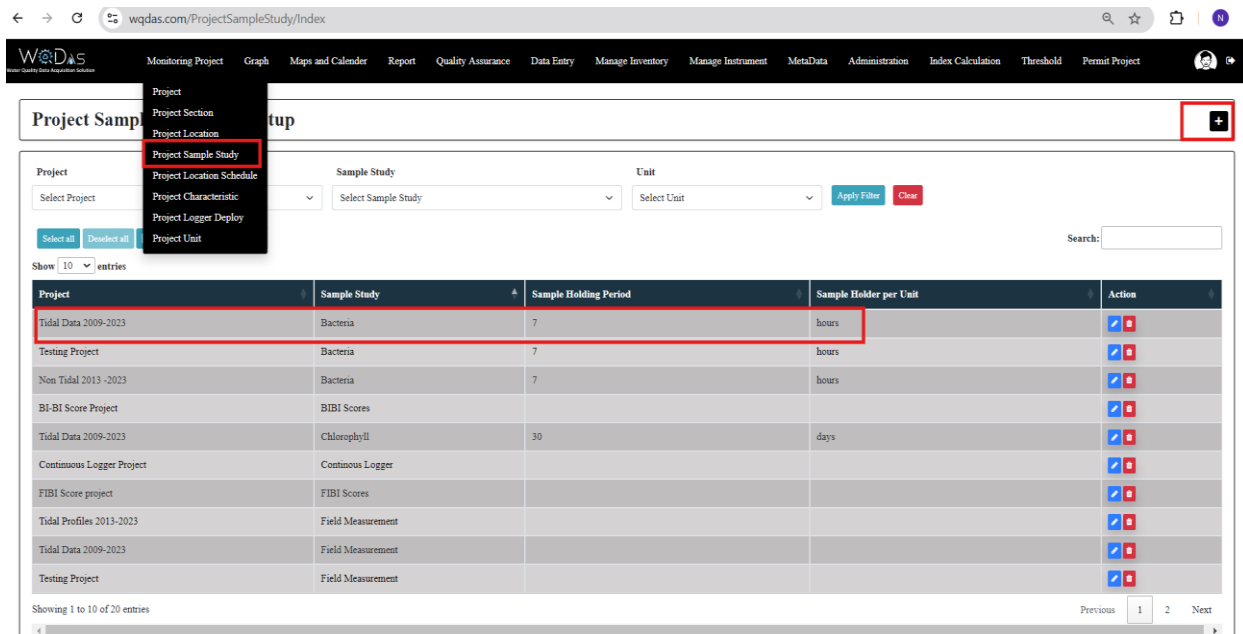


Figure 17 Define Sample study design

Create Location Schedule for Monitoring

The project manager will create a sampling schedule for each location within the project by selecting specific locations and their corresponding sample study design options. This schedule will outline how many samples will be collected at each location, with or without a profile.

To add new entries, users can click the “+” sign in the top right corner.

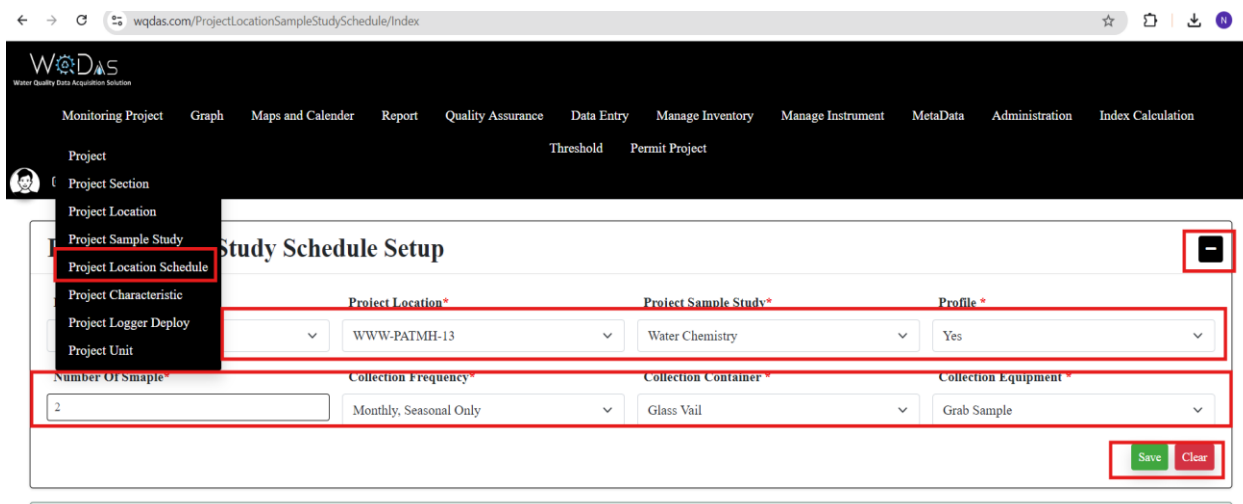


Figure 18 Define all the schedules for each individual location

Add Monitoring Parameters to the Project

The project manager will outline all relevant parameters, specifying each with reporting units, methods, sample fractions, and acceptable ranges for basic validation. The characteristic monitoring type will help team members manage data from various sources, including Field, Laboratory, and Continuous Logger. The Sample Study design will facilitate the assignment of parameters to specific categories such as Field Measurement, Water Chemistry, Chlorophyll, Bacteria, Sediment, Fish Tissue, Metals, Ion Matrix, Nutrients, BIBI Scores, Continuous Logger, Stream Flow, FIBI Scores, Habitat Assessment, Spring Index Period, Faunal Data, Vernal Pool, and Salamander Data.

Parameters collected in the field will be classified as “Field” under the “Characteristic Monitoring Type” and labeled as “Field Measurement” in the Sample Study. In contrast, parameters where field staff collect water samples for laboratory analysis will be identified as “Laboratory” and categorized as “Water Chemistry.” This classification also applies to “Bacteria” samples, which will be labeled as “Laboratory” and “Bacteria.” Continuous monitoring parameters from loggers will be classified as “Logger” under “Characteristic Monitoring Type” and labeled as “Continuous Logger.”

The project manager can assign a “Common Name” to any parameter, while the “Characteristic” name will adhere to the EPA’s WQX schema, ensuring compatibility solely with WQX. For continuous monitoring loggers, the common name may reflect what is in the export file from the instrument.

These classifications will aid in generating field sheets for staff. Additionally, defined maximum and minimum values will support the QA/QC process by indicating whether values fall within acceptable ranges, with any out-of-range values highlighted in red. Users can use the “+” sign in the top right corner to add new entries.

The screenshot shows the WQDAS web application interface. The browser address bar displays 'wqdas.com/Characteristic/Index'. The application header includes the WQDAS logo and a navigation menu with items: Monitoring Project, Graph, Maps and Calendar, Report, Quality Assurance, Data Entry, Manage Inventory, Manage Instrument, MetaData, Administration, and Index Calculation. Below the header, there are tabs for 'Project' and 'Permit Project'. A sidebar menu on the left lists navigation options: Project, Project Section, Project Location, Project Sample Study, Project Location Schedule, Project Characteristic (highlighted in red), Project Logger Deploy, and Project Unit. The main content area is titled 'Characteristic Setup' and contains a form with the following fields:

Characteristics *	Unit *	ChrMonitorType *
Select Characteristics	Select Unit	Select ChrMonitorType

Media *	Sub Media *	Sample Fraction	Sample Study
Select Media		Select Sample Fraction	

Method Speciation	Min Value *	Max Value *	Common Name
Select Method Speciation			

At the bottom right of the form, there are 'Save' and 'Clear' buttons.

Figure 19 Characteristic setup for a project

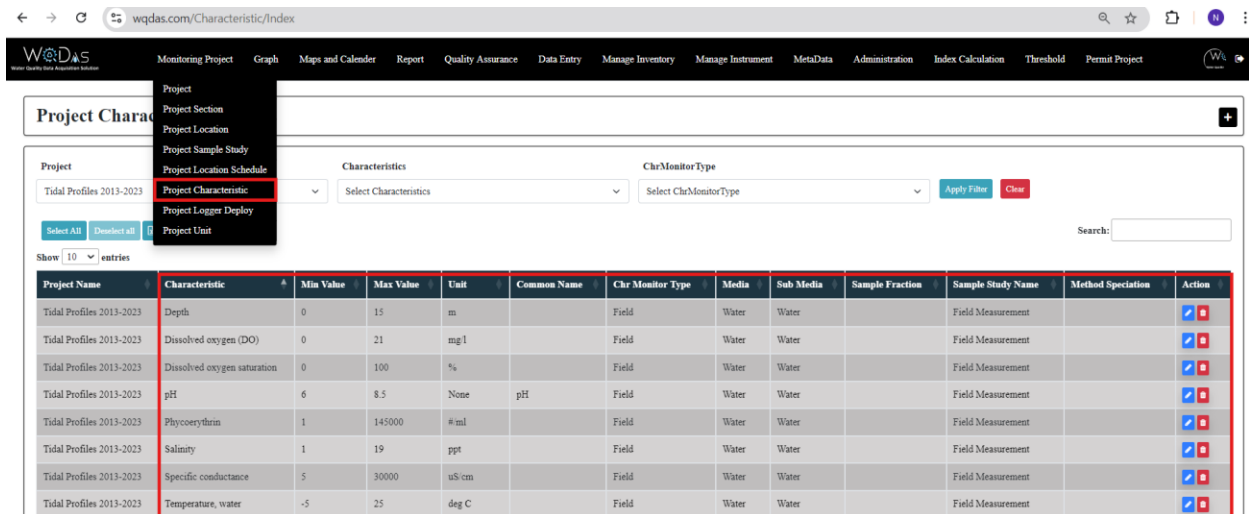


Figure 20 Assign all characteristics to a project with all metadata

Deploy Continuous Logger

If a project manager needs to deploy a continuous logger for temperature, turbidity, or other parameters, they can set up the logger and monitor all continuous data collected. For new logger deployments, it's crucial that the logger is listed on the inventory table with all necessary information. If the logger is not already in the inventory, it must be added first. The "+" sign in the top right corner is always used for creating new entries.

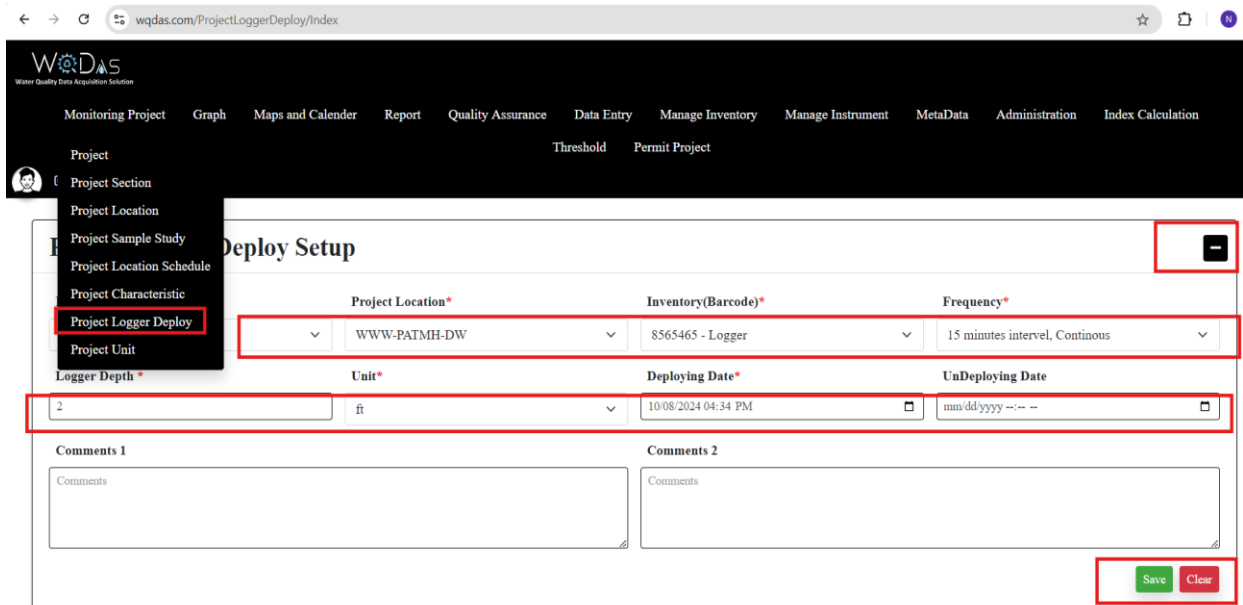


Figure 21 Logger deployment for continuous monitoring

Assigning Different Units

The project manager ensures that all required units for various measurements are included. Team members should be well-versed in the measurement units used for each sampling depth, whether in meters, feet, or yards. This applies equally to flow measurements.

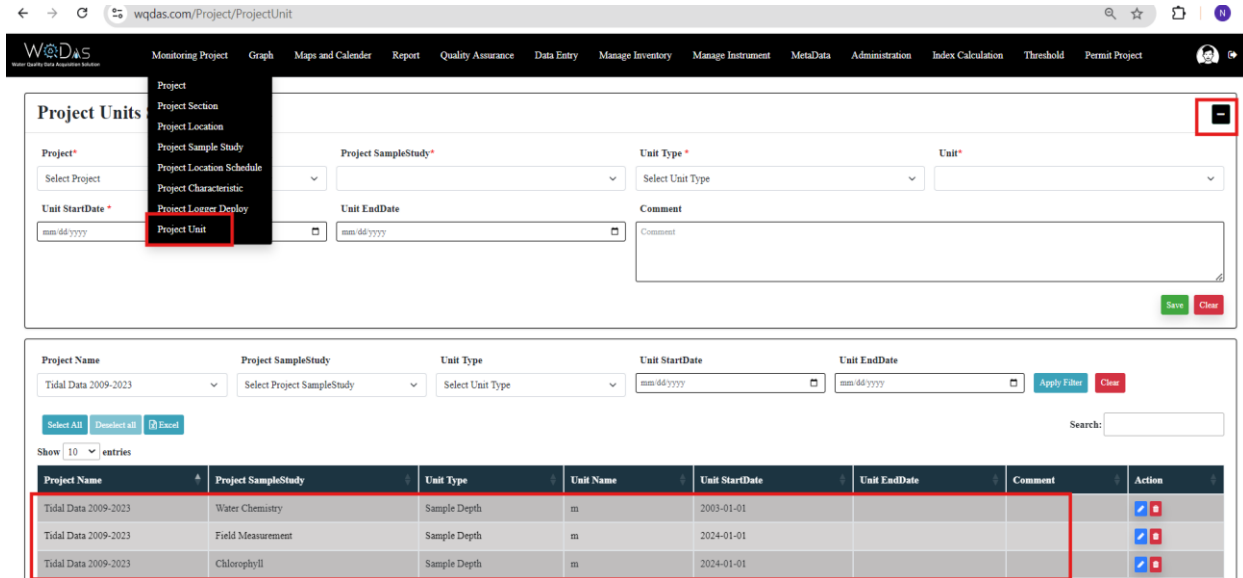


Figure 22 Assigning different units

Assigning Instruments to Staff

Project managers need to assign instruments to field staff to enable them to carry out their responsibilities effectively. Before assigning any instrument, it must be included in the inventory table with all relevant metadata. For guidance on how to add an instrument to the table, please see the section on “Instrument Inventory Management.”

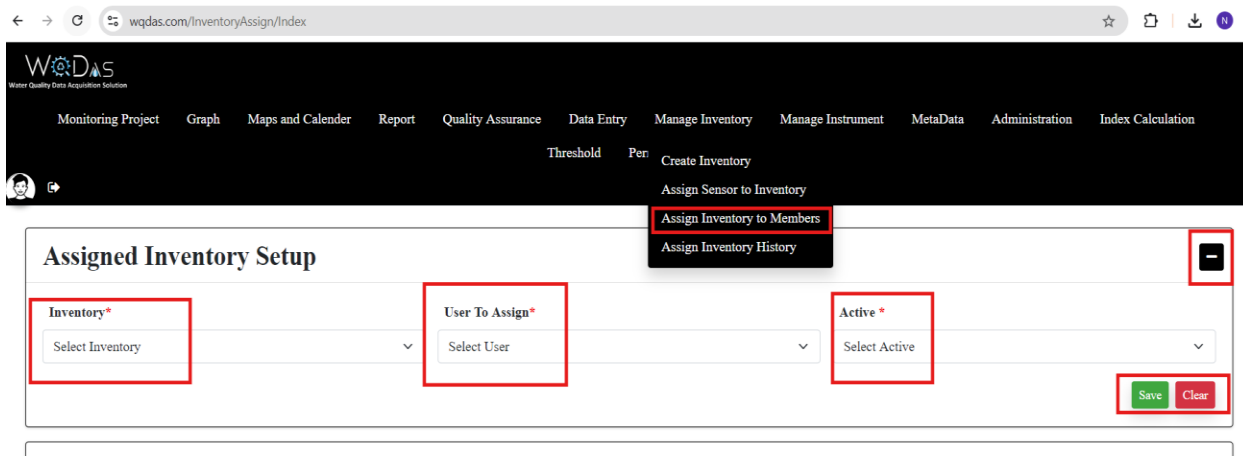


Figure 23 Assign instruments to staff

Data Entry:

All field sheets will be populated based on the project's definition, Sample Study design, and the instruments assigned to staff. For instance, if a project includes "Observations," "Water Flow," "Field Measurements," and "Water Chemistry," the field sheets will display only these four sections. Conversely, if a project consists solely of "Field Measurements" and "Water Chemistry," only those two sections will appear. Similarly, if a project includes only BIBI or FIBI Score options, the sheets will populate with just the BIBI and FIBI score sections. This logic applies to all other Sample Study options as well. Please refer to the explanation below for details on each individual sample study option.

Data From the Field

Starting an Activity in the Field

Field staff will initiate an activity by selecting a project name, location, and date using a data entry screen. They can start by clicking the "+" sign in the top corner to expand the screen, while the "-" sign will minimize it.

Once the project name is selected, all related sheets will populate according to the Sample Study Plan for that specific project. The screen will first prompt users to validate which instruments they plan to use during this visit. This list will only display the instruments assigned to the user. If no instruments have been assigned, an error message will indicate that required fields are missing.

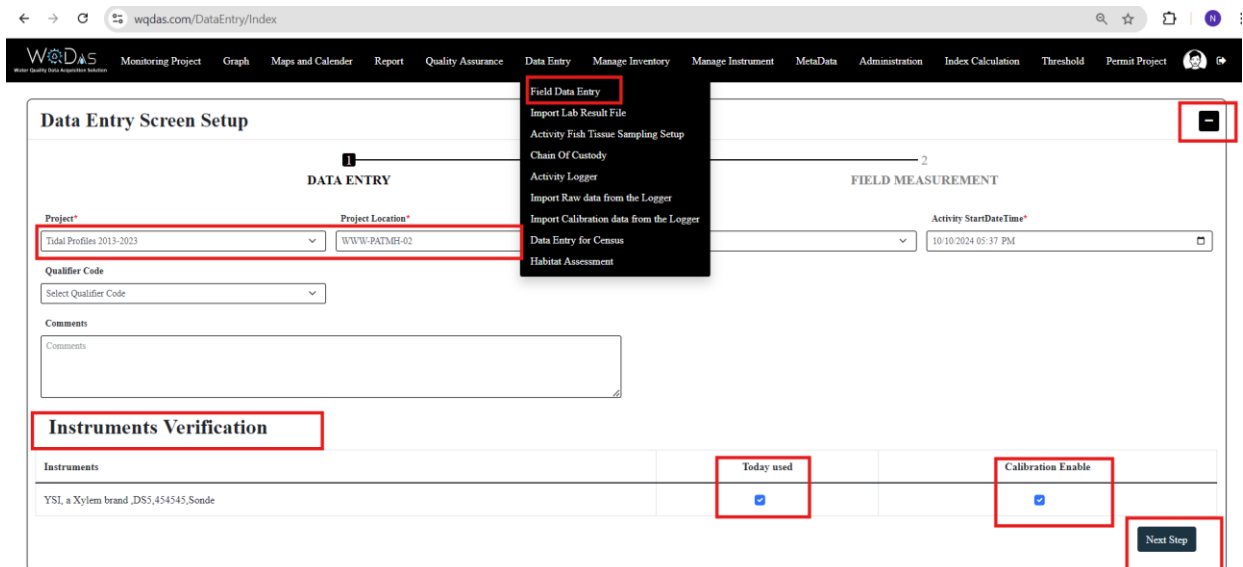


Figure 24 Data entry setup Instrument verification

Collecting Observations in the Field

If the project manager includes “Observations” in the Project Sample Study section, the “Observation” section will be available for data entry. This value is recorded as a percentage; for example, if there are 10% clouds today, that will be reflected in the data entry. The same applies to “Tides,” which is also recorded as a percentage.

The screenshot shows the WQDas Data Entry Index page. The top navigation bar includes links for Monitoring Project, Graph, Maps and Calendar, Report, Quality Assurance, Data Entry, Manage Inventory, Manage Instrument, MetaData, Administration, Index Calculation, Threshold, and Permit Project. The main content area is titled "Data Entry Screen Setup" and contains several sections:

- DATA ENTRY**: A section with a dropdown menu for "Field Data Entry" (highlighted with a red box). The menu options include: Field Data Entry, Import Lab Result File, Activity Fish Tissue Sampling Setup, Chain Of Custody, Activity Logger, Import Raw data from the Logger, Import Calibration data from the Logger, Data Entry for Census, and Habitat Assessment.
- Project**: A dropdown menu with "Testing Project" selected (highlighted with a red box). Next to it is the "Project Location" field with the value "WWW-PAT05-19" (highlighted with a red box).
- Activity Start/End Time**: A dropdown menu with "FIELD MEASUREMENT" selected and a date/time field showing "10/10/2024 05:37 PM".
- Qualifier Code**: A dropdown menu with "Select Qualifier Code" selected.
- Comments**: A text area for entering comments.
- Instruments Verification**: A table with columns "Instruments", "Today used", and "Calibration Enable". The table contains one row: "YSI, a Xylem brand ,DS3,454545,Soonde". The "Today used" and "Calibration Enable" cells contain blue checkmarks (highlighted with a red box).
- Observation**: A section with fields for "Cloud cover (No Unit)", "Tide (No Unit)", and "Rain Yesterday". The "Cloud cover" field has a dropdown menu with "Cloud cover" selected (highlighted with a red box). The "Tide" field has a dropdown menu with "Tide" selected (highlighted with a red box). The "Rain Yesterday" field has a dropdown menu with "Select Rain Yesterday" selected (highlighted with a red box).
- Comments**: A text area for entering comments.
- Next Step**: A button at the bottom right (highlighted with a red box).

Figure 25 Activities tracking with observations used during this activity

Collecting Water Flow Reading

Field staff should enter all required metadata first and then add flow values for each segment of the stream's width. WQDas will automatically calculate the average flow based on the values entered by the field staff.

Water Flow Details

Looking down stream

Left
 Bank

Stream Total Width (ft): 12

Average Stream Flow (cm/sec): Stream Total Width

Instrument: Fisher Scientific,PRO DSS,545646

Flow Through: Stream

Qualifier Code: Construction

Distance from Initial Point (ft)	Depth (ft)	Velocity (cm/sec)
0	1.5	1.3
2	2	2.5
4	2.5	3.2
6	3	1.5
8	1.4	2.6
10	2	2.3
12	1.3	1.9

Close

Figure 26 Water flow measurements

For Water Chemistry Samples

If the project manager has defined water chemistry samples for collection, the screen will automatically generate barcodes for each individual sample. Field staff can print and attach these barcodes to each sampling container or bottle. This screen will display all metadata related to each collected sample, ensuring that field staff understands all requirements. Additionally, field staff can add comments or select flags as needed.

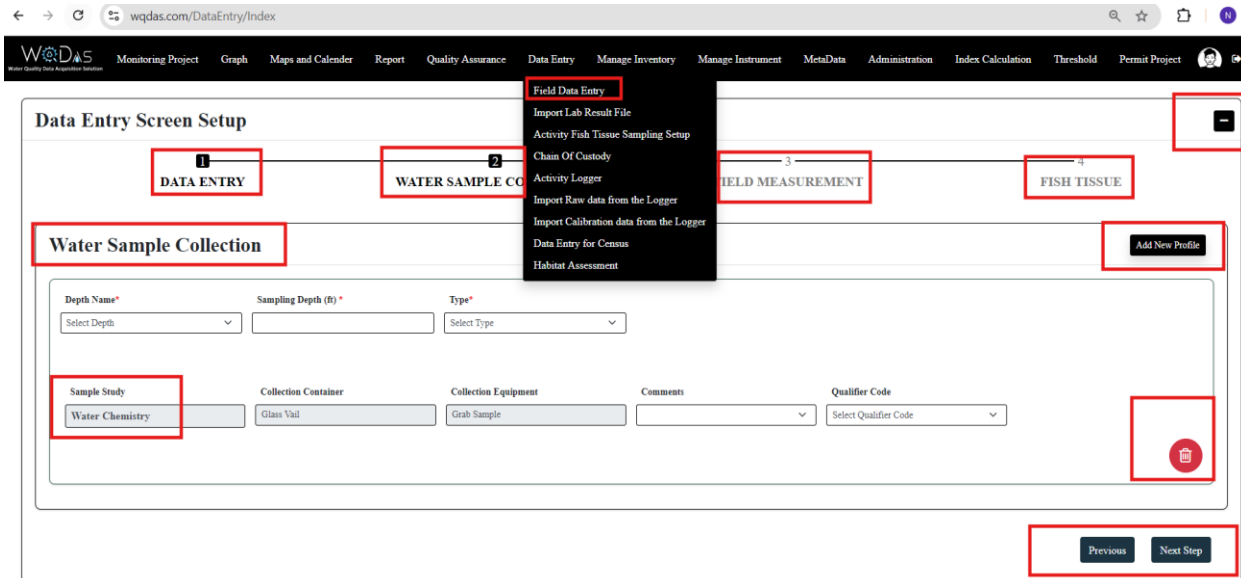


Figure 27 Water sample collection

For Field Measurement

This screen will display all parameters defined by the project manager in the “Project Characteristics” section for “Field,” along with all associated metadata. Analytical method codes will be automatically generated based on the instruments used by the staff that day.

To minimize typing errors, users are required to enter the same value three times. Additionally, users can create multiple profiles by clicking the “Add New Profile” button. For each profile, it is necessary to select both “Activity Type” and “Depth.”

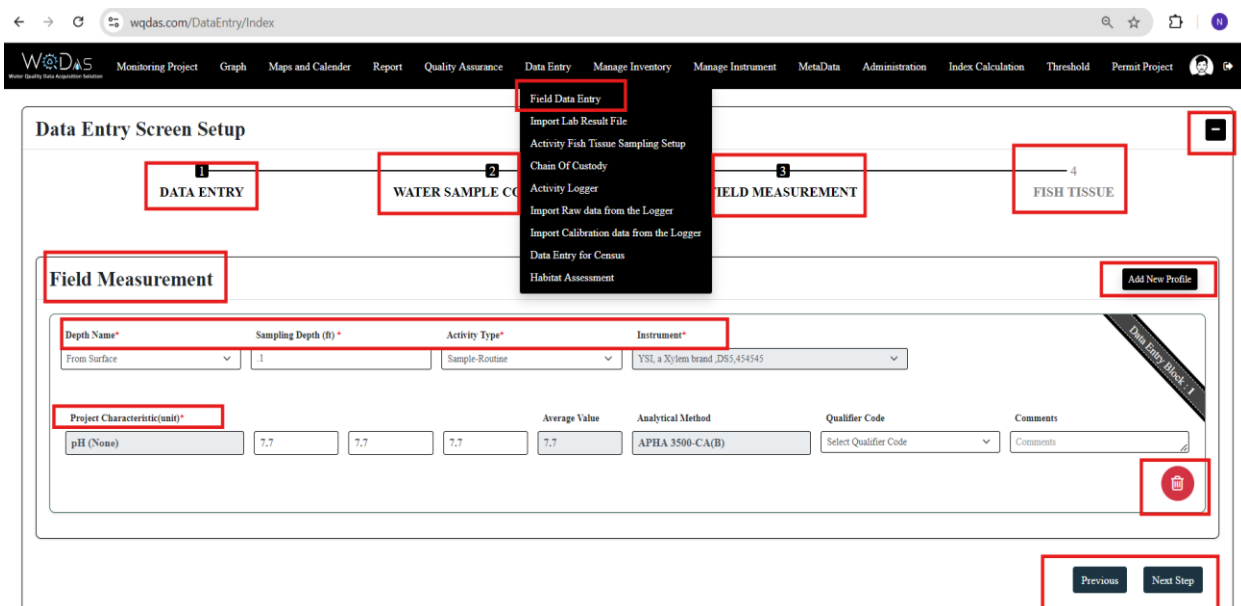


Figure 28 Data entry for Field Measurement

For Fish Tissue Samples

Field staff can enter basic metadata on this screen, including details such as the type of ramp, ramp condition, ramp access, survey method, and site width and depth, as well as the type of shocker used.

The screenshot shows the 'Data Entry Screen Setup' interface for 'FISH TISSUE' samples. The interface is divided into four numbered sections: 1. DATA ENTRY, 2. WATER SAMPLE COLLECTION, 3. FIELD MEASUREMENT, and 4. FISH TISSUE. The 'Project' field is highlighted with a red box, and a dropdown menu is open, showing options like 'Field Data Entry', 'Import Lab Results File', 'Activity Fish Tissue Sampling Setup', 'Chain Of Custody', 'Activity Logger', 'Import Raw data from the Logger', 'Import Calibration data from the Logger', 'Data Entry for Cases', and 'Further Assessment'. The 'Instruments Verification' section is also highlighted with a red box, showing a table with columns for 'Instrument', 'Today used', and 'Calibration Enable'. The 'Observation' section is highlighted with a red box, showing fields for 'Chad survey (Y/N)', 'Date (M/Y)', 'Date Verified', and 'Comment'. The 'Fish Tissue' section is highlighted with a red box, showing fields for 'Ramp Information', 'Ramp Condition', 'Ramp Access', 'Survey Method', 'Site Width (ft)', 'Site Depth (ft)', 'Shocker', and 'Select Site'. A 'Save Step' button is highlighted with a red box at the bottom right.

Figure 29 Data entry for Fish tissue samples

After entering all the metadata, field staff will begin adding fish information, including the fish name, length, weight, gender (if known), and any anomalies for each set of composite samples. The system will automatically generate barcodes for each composite sample and calculate averages for each set. While the recommended number of fish is five, it is also acceptable to have fewer than five samples.

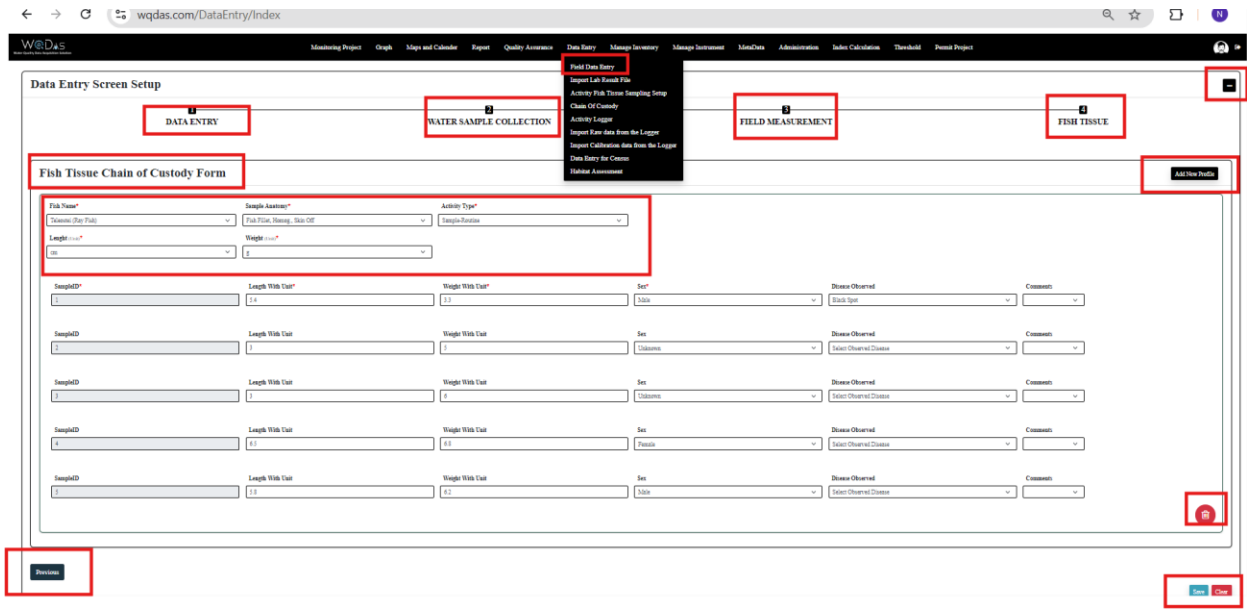


Figure 30 Fish sample details

Users can view details about fish tissue composite samples by clicking on “Activity Fish Tissue Sampling.”

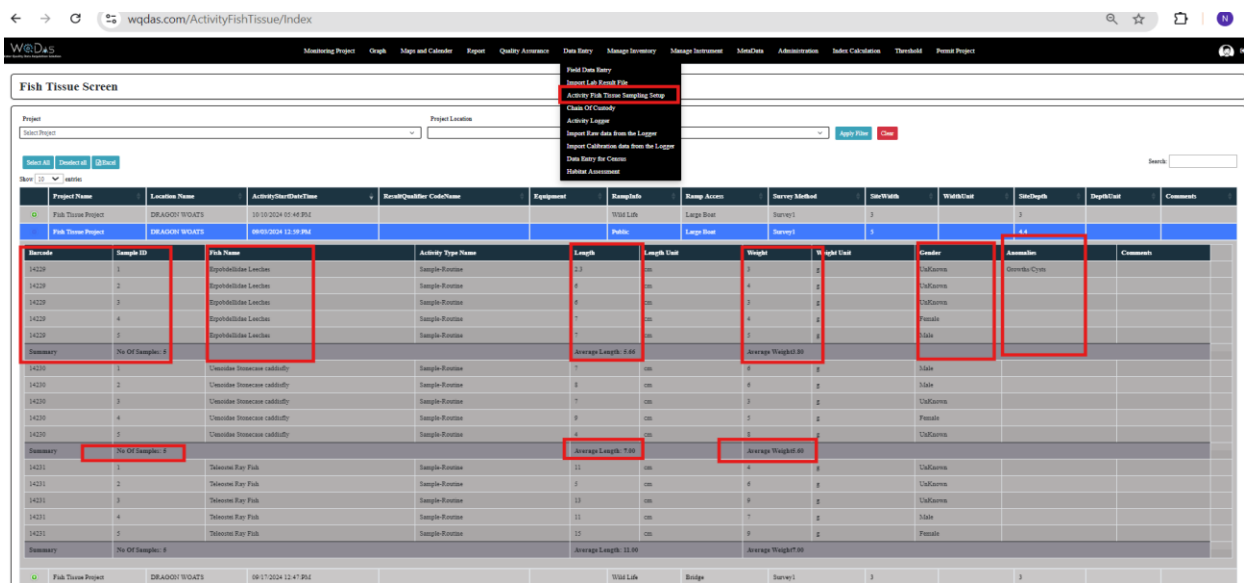


Figure 31 Fish sample calculations for composite sample

For Water Bacteria or Chlorophyll Samples

This screen is quite similar to the water chemistry screen, allowing users to add multiple profiles for each set.

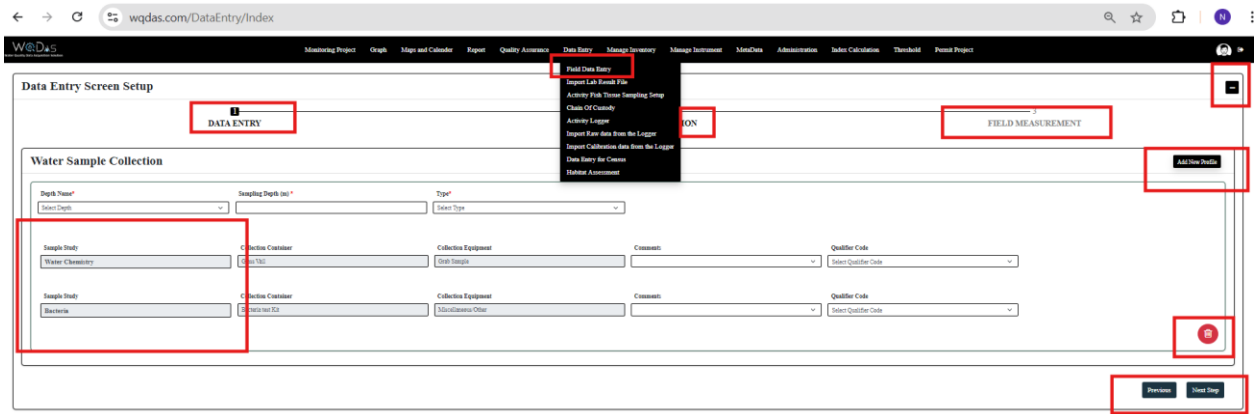


Figure 32 Chlorophyll sample and Bacteria sample auto generated barcodes

For Census Projects

For BIBI or FIBI score calculator projects, field staff can select the project name from the dropdown and start adding the metadata. The subsequent screen will populate according to the chosen BIBI or FIBI project, enabling staff to enter all necessary metadata before they begin counting macroinvertebrates or fish.

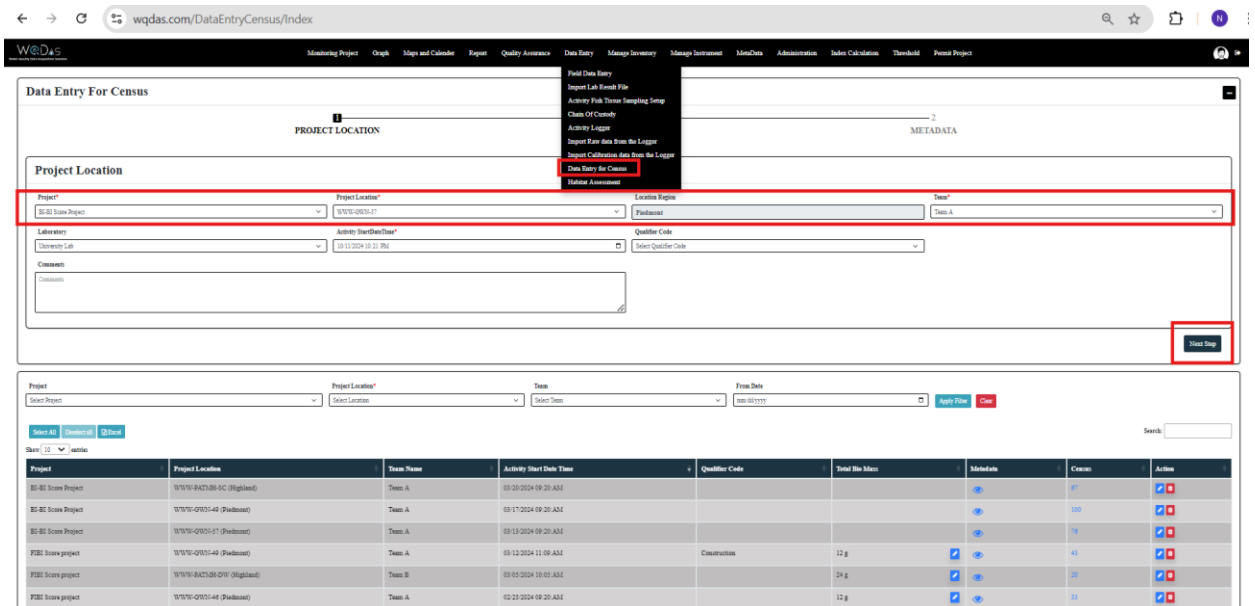


Figure 33 Census data entry for BIBI or FIBI projects

The next screen focuses on the remaining metadata, including details such as the type of nets used for today's activity and the equipment being utilized.

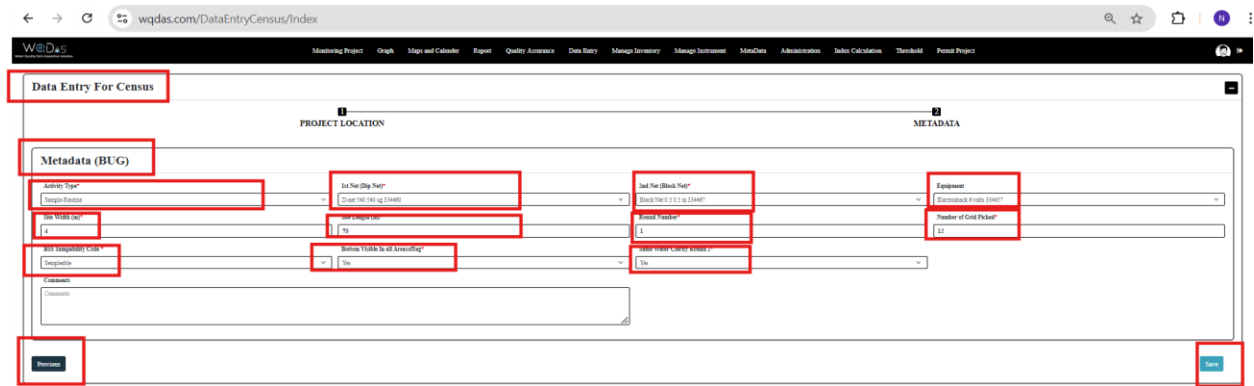


Figure 34 Data entry for BIBI and FIBI metadata

After saving the metadata, field staff can add counts for the bugs or fish. They can select names from a dropdown menu and specify the number of individuals caught. Additionally, they have the option to include or exclude certain entries from the calculations. Field staff can also take pictures or preserve samples for later reidentification. To view previously entered information for all activities, they can click on the “eye” icon.

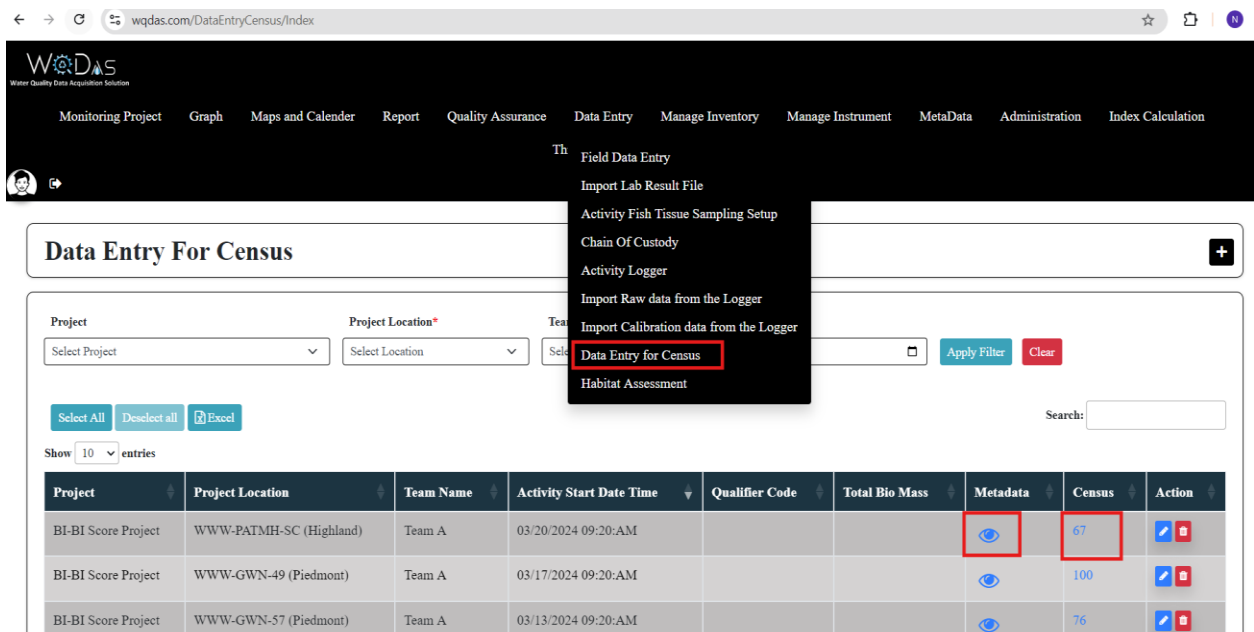


Figure 35 Detail for BIBI and FIBI data

Field staff can enter information for any bug or fish by clicking on the census number and selecting a new entry from the dropdown list.

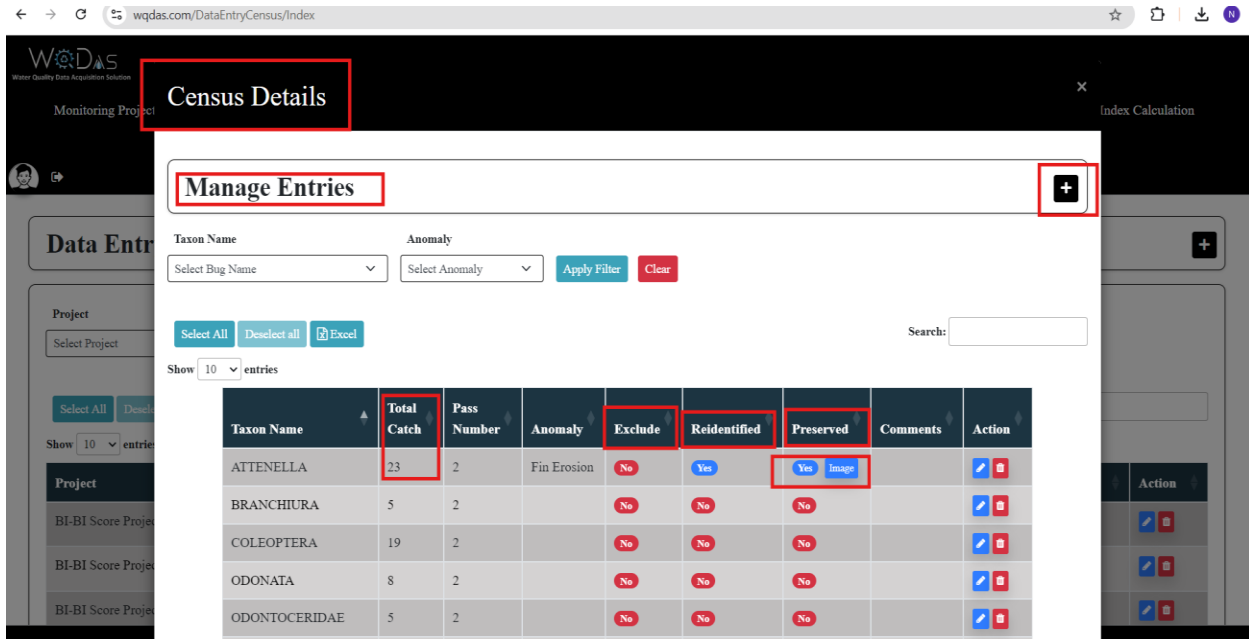


Figure 36 BIBI or FIBI individual entry

For more details, please refer to this screen.

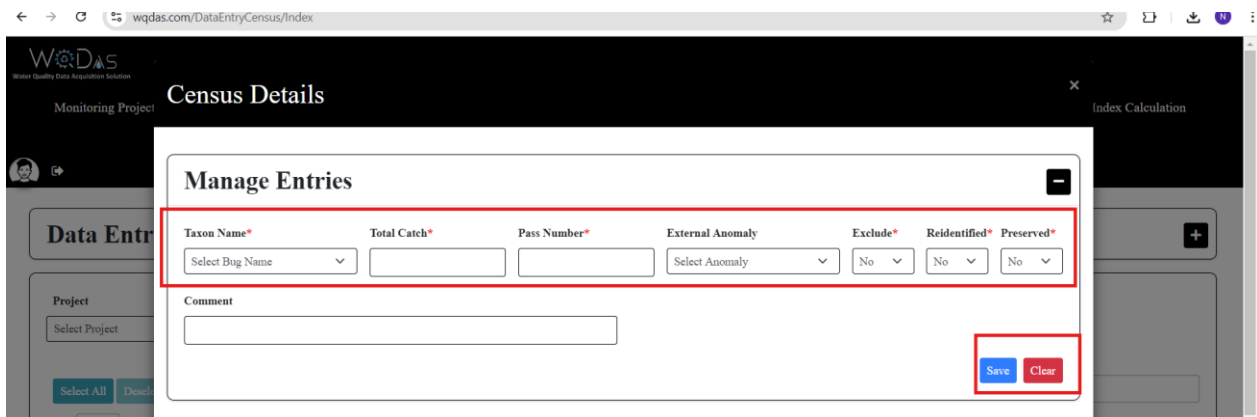


Figure 37 New entry for bug or fish

Habitat Assessment

Field staff can enter the habitat assessment data by selecting the project name from the dropdown menu.

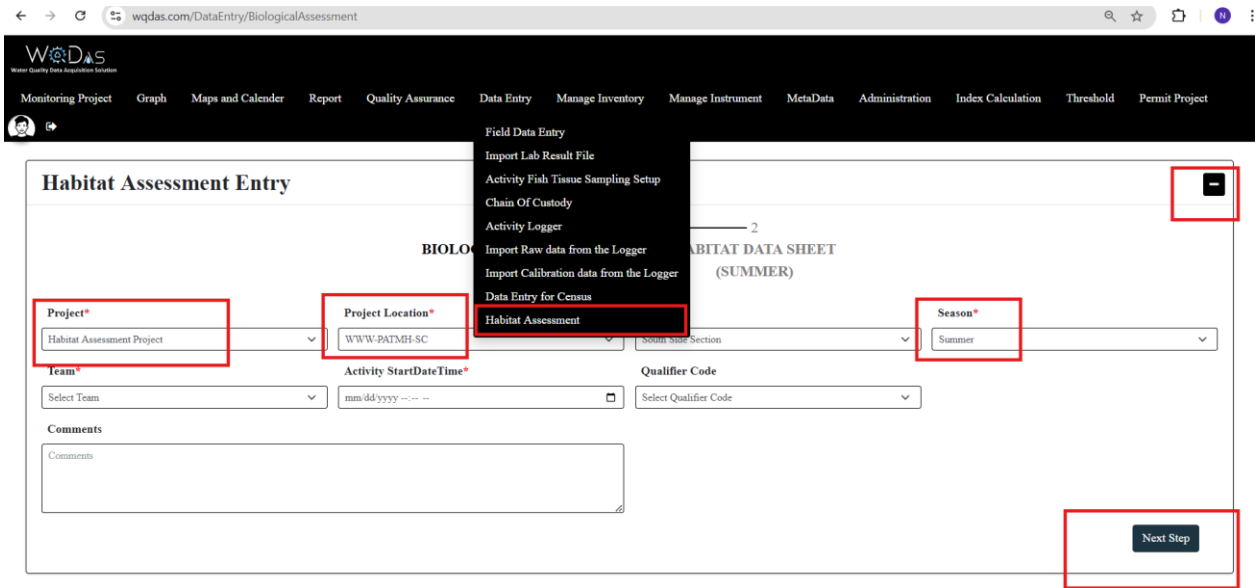


Figure 38 Habitat project data entry

After entering all metadata, field staff will begin inputting values for the left or right side of the stream bank and documenting all stream conditions in the sheet. Guidance for the criteria can be accessed by clicking the “?” icon next to each row label. Staff can also add water flow readings and depth for different segments by clicking the “Add New” button in the bottom section.

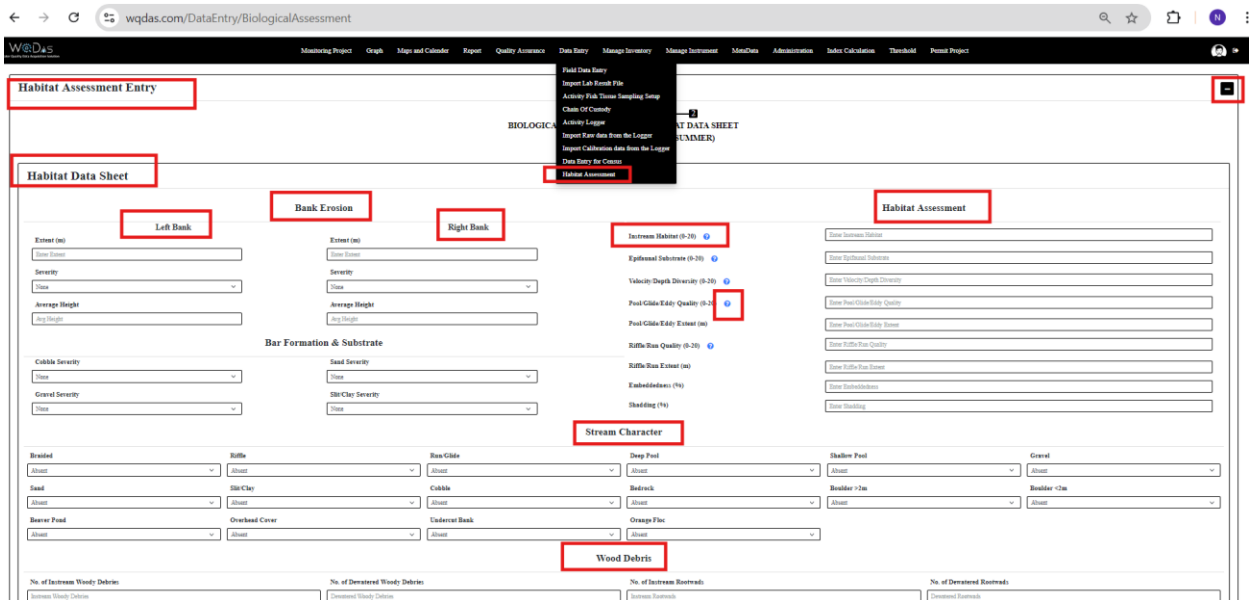


Figure 39 Habitat project metadata entry

Figure 40 Habitat data entry for each section including Depth and flow

Import Lab Results


Staff can import Excel sheet results into WQDas using a downloadable template  from the import screen. After formatting the lab results in this template, users can upload it to WQDas by clicking the “+” sign and selecting “Save the Excel” file. WQDas will validate all metadata before saving the file. If any errors are detected, the affected row will turn red, while valid rows will turn green. Users will only be able to save the file when all rows are green. The system will validate the location name, sampling date, and barcode generated during the field data entry process. If the data is verified, it will be saved; if not, a message will prompt the user to reconfirm the information. The lab manager can upload files using their credentials.

Figure 41 Importing lab results from excel sheet

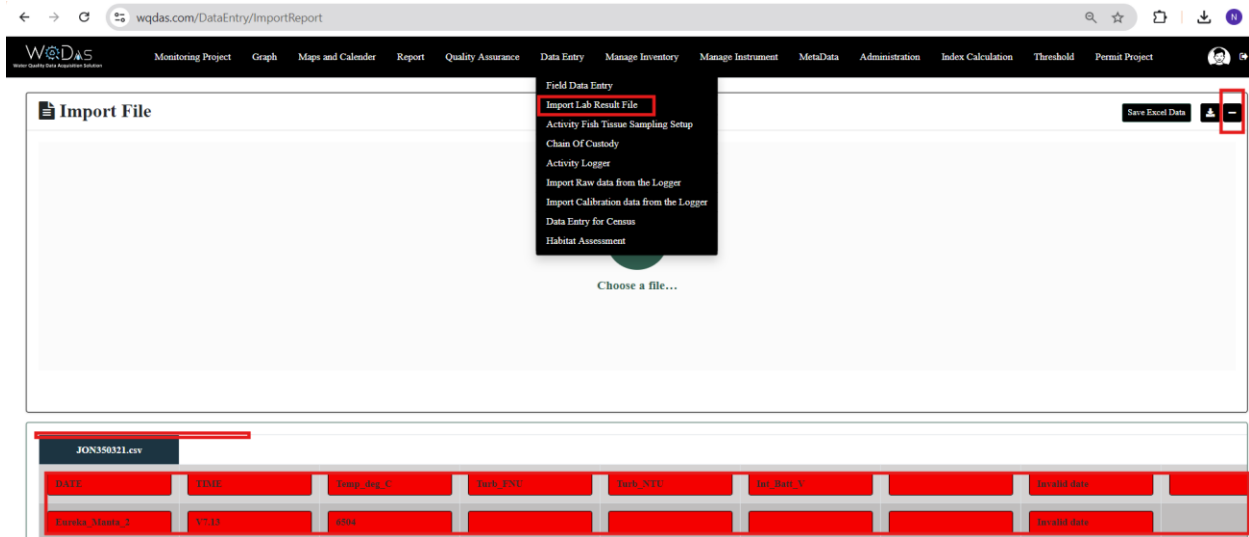


Figure 42 How to import lab results from excel sheets with validation

Import Continuous Logger Raw Data

On this screen, the user can upload a file extracted from the instrument containing all the Raw data.

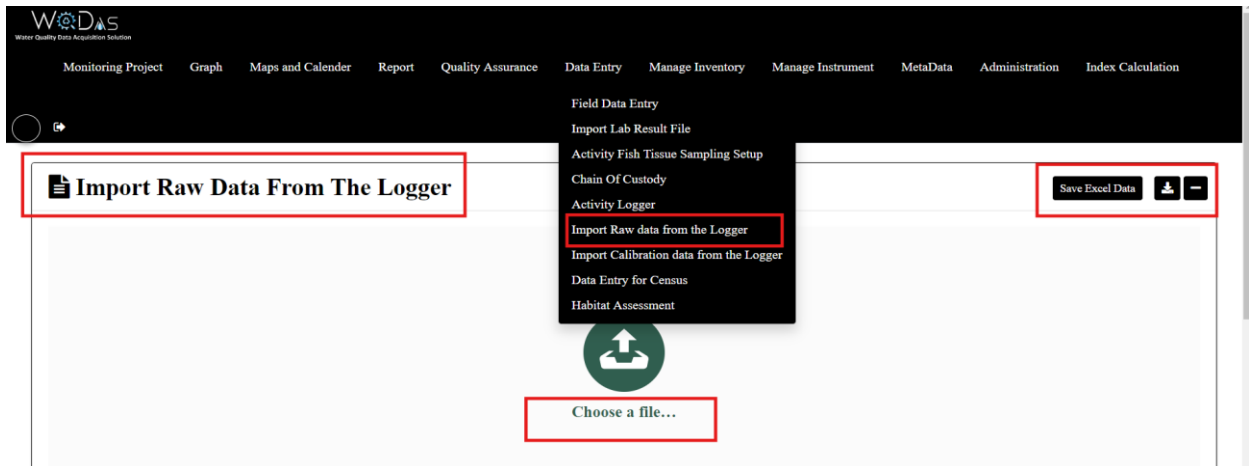


Figure 43 Importing Logger raw data

Import Continuous Logger Calibration Data

On this screen, the user can upload a file extracted from the instrument containing all the calibration data.

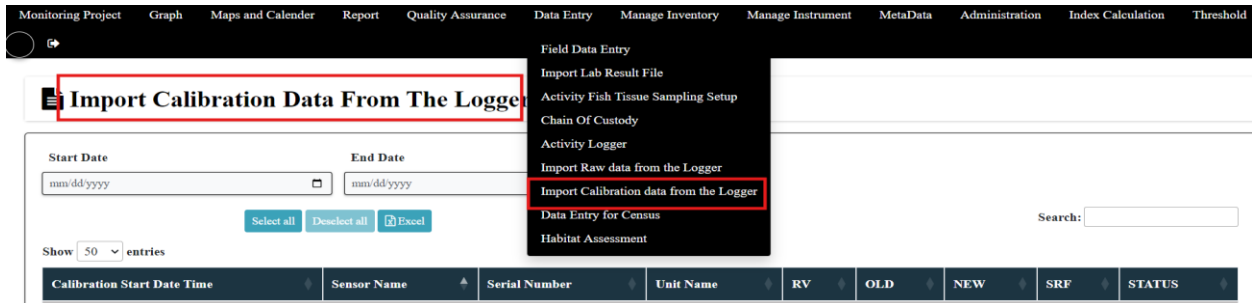


Figure 44 Importing continuous Logger calibration data

On this screen, users can view the details of the calibration file imported into WQDas from the logger.

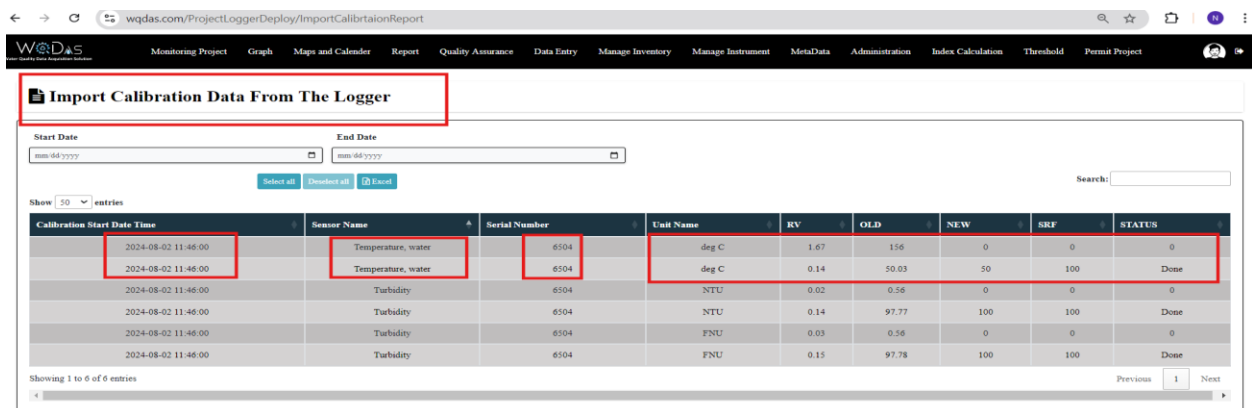


Figure 45 Details about Logger calibration data

Activities List

Each row represents a site visit, containing all the information collected on that specific date. To view details about any activity at a particular location, users can click the “eye” icon. This will open a popup that displays additional information, allowing users to review each item one by one.

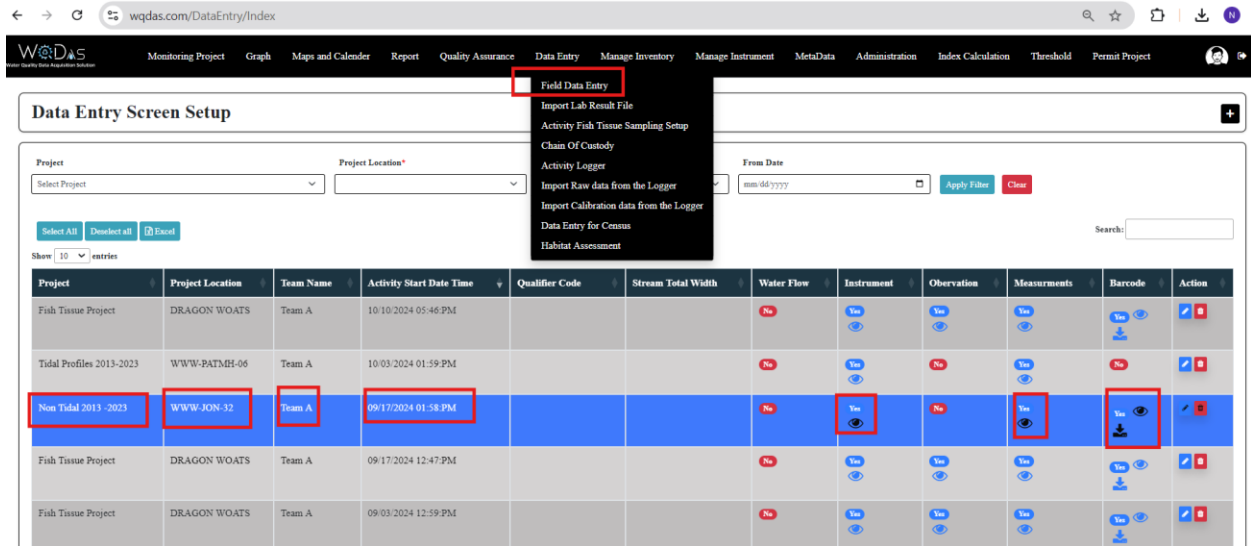


Figure 46 Activities tracking

For Instruments Used

For instruments used during this activity

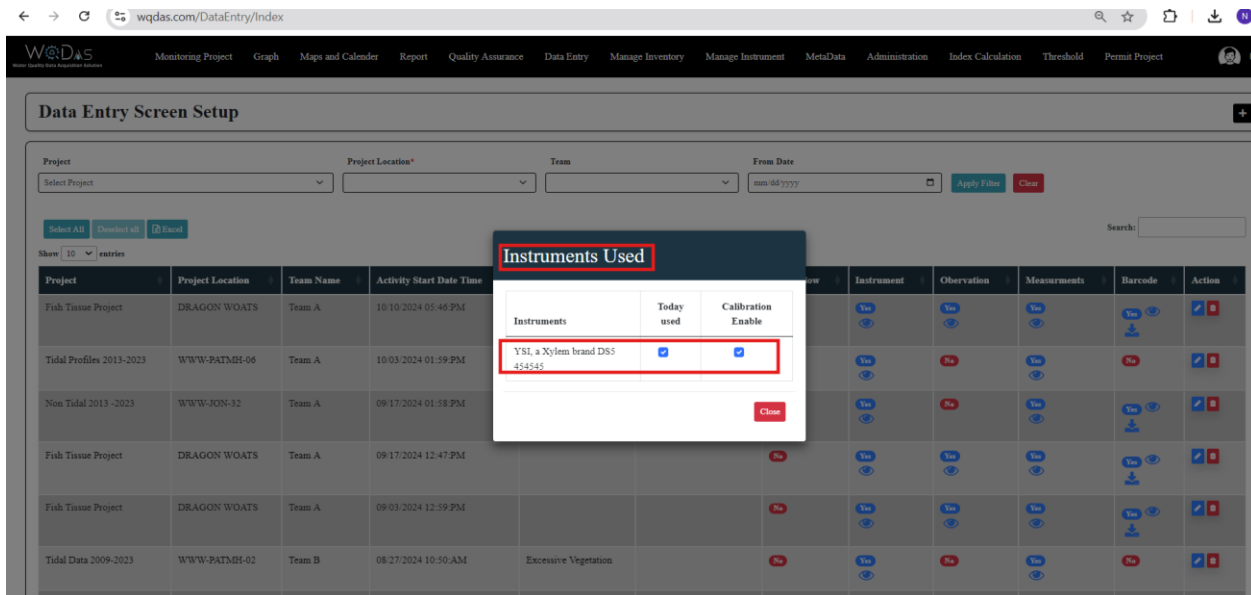


Figure 47 Activities tracking with instruments used during this activity

For Observations Screen

Users can click the eye icon to view the popup for this date.

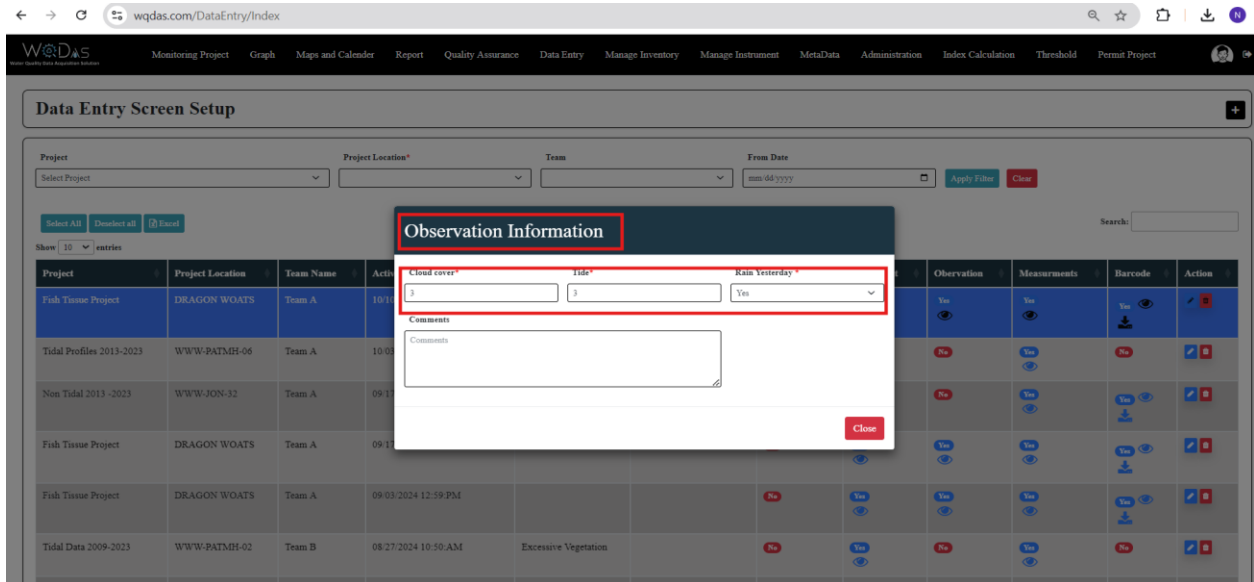


Figure 48 Data entry for Observations

For Field Measurements

Users can click the “eye” icon to view the popup for this date.

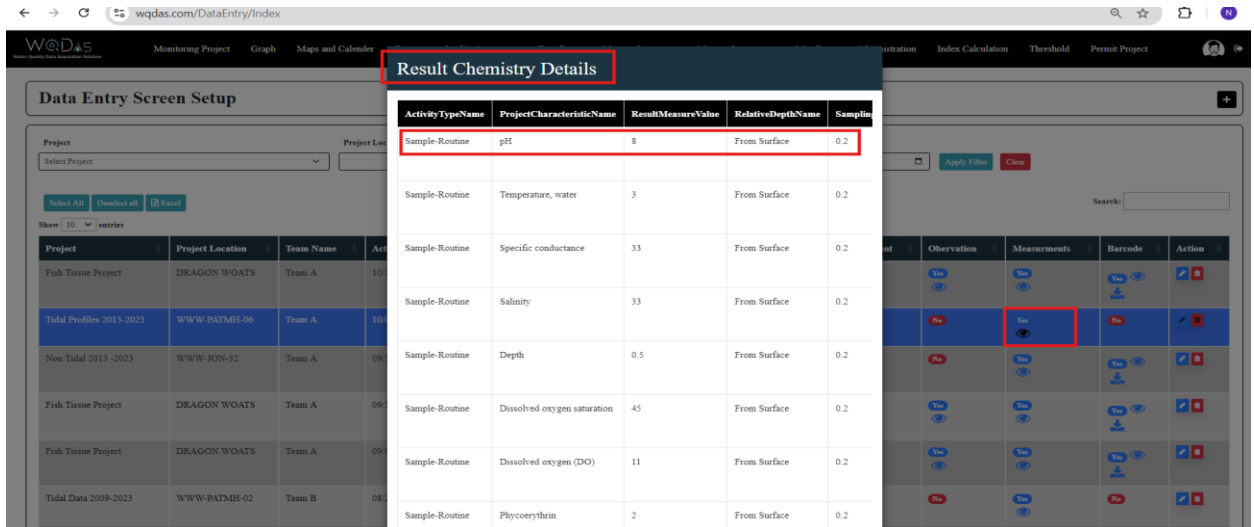


Figure 49 Details of data entry for field measurements

For all the sampling bottles or containers used for this activity.

For Sampling Container

For detailed results from the lab for each sampling bottle

Project	Project Location	Team Name	Activity Start Date Time	Qualifier Code	Stream Total Width	Water Flow	Instrument	Observation	Measurements	Barcode	Action
Fish Tissue Project	DRAGON WOATS	Team A	10/10/2024 05:46 PM			No	Yes	Yes	Yes	Yes	Yes
Tidal Profiles 2013-2023	WWW-PATMH-06	Team A	10/03/2024 01:59 PM			No	Yes	No	Yes	No	Yes
Non Tidal 2013 -2023	WWW-JON-32	Team A	09/17/2024 01:58 PM			No	Yes	No	Yes	Yes	Yes
Fish Tissue Project	DRAGON WOATS	Team A	09/17/2024 12:47 PM			No	Yes	Yes	Yes	Yes	Yes
Fish Tissue Project	DRAGON WOATS	Team A	09/03/2024 12:59 PM			No	Yes	Yes	Yes	Yes	Yes
Tidal Data 2009-2023	WWW-PATMH-02	Team B	08/27/2024 10:50 AM			No	Yes	No	Yes	No	Yes
Tidal Data 2009-2023	WWW-PATMH-05	Team B	08/27/2024 10:44 AM			No	Yes	No	Yes	No	Yes
Tidal Data 2009-2023	WWW-PATMH-01	Team B	08/27/2024 10:42 AM			No	Yes	No	Yes	No	Yes
Non Tidal 2013 -2023	WWW-GWN-46	Team A	12/06/2023 12:00 AM			No	No	No	Yes	Yes	Yes
Non Tidal 2013 -2023	WWW-GWN-48	Team A	12/06/2023 12:00 AM			No	No	No	Yes	Yes	Yes

Figure 50 Activities tracking with all barcodes generated during this activity

Results From the Lab

If a blue “eye” icon is displayed, it indicates that lab results are available for this sample; otherwise, the results are still pending from the lab.

Activity Type	Media	Sub Media	Project Name	Characteristic Name	Unit Name
Sample-Routine	Water	Water	Non Tidal 2013 -2023	Total Nitrogen, mixed forms	-
Sample-Routine	Water	Water	Non Tidal 2013 -2023	Total Phosphorus, mixed forms	-

Figure 51 Details about barcodes

Results are not received from the lab yet.

The screenshot displays the 'Data Entry Screen Setup' interface. At the top, there are navigation tabs: Monitoring Project, Graph, Maps and Calendar, Report, Quality Assurance, Data Entry, Manage Inventory, Manage Instrument, MetaData, Administration, Index Calculation, Threshold, and Permit Project. Below these are search and filter options for Project, Project Location, Team, and From Date. A modal window titled 'Barcode' is centered on the screen, containing a table with the following data:

Bar Code Number	Action
14234	Not Found
14235	Not Found

The background table has the following columns: Project, Project Location, Team Name, Activity Start Date, Instrument, Observation, Measurements, Barcode, and Action. The first row shows 'Fish Tissue Project' at 'DRAGON WOATS' on 'Team A' at '10/10/2024 05:46:PM'. Other rows include 'Tidal Profiles 2013-2023', 'Non Tidal 2013 -2023', and 'Tidal Data 2009-2023'.

Figure 52 Activities tracking with details about barcodes generated during this activity

Quality Assurance of the Data

Data Quality Checks

Quality assurance officers can verify data accuracy by running various reports. The first report is based on limits established by the project manager for each characteristic in the “Project Characteristics.” If a sampling value falls outside the specified range for these characteristics, it will turn red.

The screenshot shows the WQDAS Quality Assurance Verification interface. The navigation menu includes: Monitoring Project, Graph, Maps and Calendar, Report, Quality Assurance, Data Entry, Manage Inventory, Manage Instrument, MetaData, Administration, Index Calculation, Threshold, and Permit Project. The main content area has a search bar and a dropdown menu for 'Quality Assurance Verification' with options: Sample Container Tracking, Missing Barcode From Lab, All Sensor Results, Audit Result Summary, and QA/QC Check Setup. Below the search bar are filters for Project, Location, Characteristics, and Activity Type. There are also 'From Date' and 'To Date' fields. A toolbar contains buttons for 'Select All', 'Deselect all', 'Excel', and 'Change Status'. The data table below has the following columns: ProjectName, LocationName, ActivityTypeName, ActivityStartDateTime, RelativeDepthName, SamplingDepth, MediaName, CharacteristicsName, ResultMeasureValue, SampleFraction, AnalyticalName, and Qualifier. The table contains five rows of data, with the third row highlighted in red.

ProjectName	LocationName	ActivityTypeName	ActivityStartDateTime	RelativeDepthName	SamplingDepth	MediaName	CharacteristicsName	ResultMeasureValue	SampleFraction	AnalyticalName	Qualifier
Non Tidal 2013 -2023	WWW-JON-32	Sample-Routine	2024-09-17 01:58 PM	From Surface	1 m	Water (Water)	Temperature, water (deg C)	23		USFDA 3135.2I	
Tidal Profiles 2013-2023	WWW-PATMH-06	Sample-Routine	2024-10-03 01:59 PM	From Surface	0.2 ft	Water (Water)	Temperature, water (deg C)	3		USFDA 3135.2I	
Non Tidal 2013 -2023	WWW-JON-32	Sample-Routine	2024-09-17 01:58 PM	From Surface	1 m	Water (Water)	Optical brighteners (ppm)	5		USFDA 1668A	
Tidal Profiles 2013-2023	WWW-PATMH-06	Sample-Routine	2024-10-03 01:59 PM	From Surface	0.2 ft	Water (Water)	pH (None)	8		APHA 3500-CA(B)	
Fish Tissue Project	DRAGON WOATS	Sample-Routine	2024-09-17 12:47 PM	From Surface	3 ft	Water (Water)	pH (None)	7		APHA 3500-CA(B)	

Figure 53 Quality assurance of sampling data

The quality assurance officer can then update the record's status with a qualifier code, changing it from “Preliminary” to “Final.” If the status is marked as “Invalid,” a qualifier code is required to provide a reason for the invalidation. All users can export all or selected rows to an Excel file for further analysis.

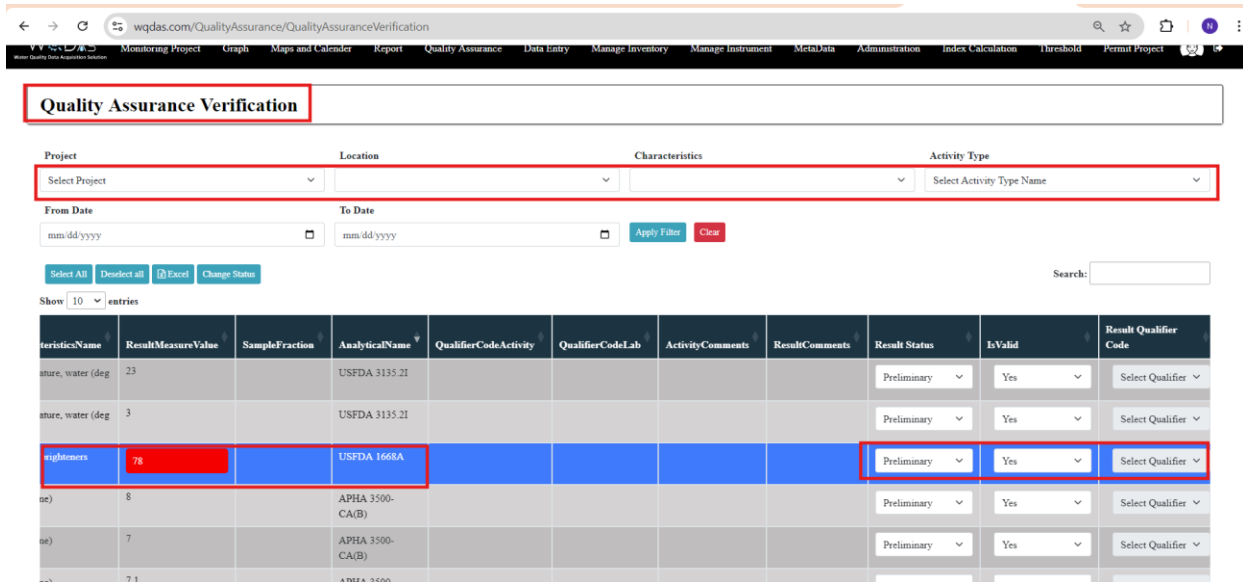


Figure 54 Quality assurance of data

Logger Activity Tracking

Field staff can use this screen to log all activities related to any continuous logger. All team members can view the activities occurring at this location for the logger. Field staff can also track maintenance tasks, such as whether the logger was cleaned today, calibrated, or what file name was uploaded for the raw data from the logger.

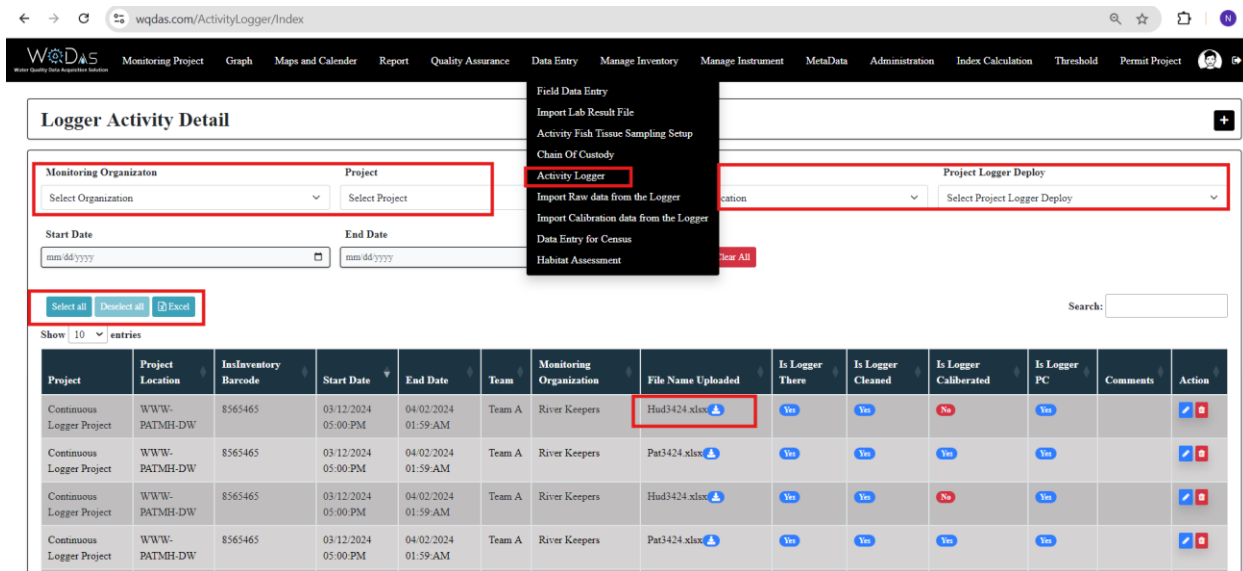


Figure 55 Activities for logger for maintenance and data download

Calibration and Precision Data

Managers can track the maintenance of all instruments used within the organization. A field staff can enter Precision check criteria and then start adding the standard and actual value to see if

instruments pass or fail the test. Users can see details about any test by clicking on the summary button.

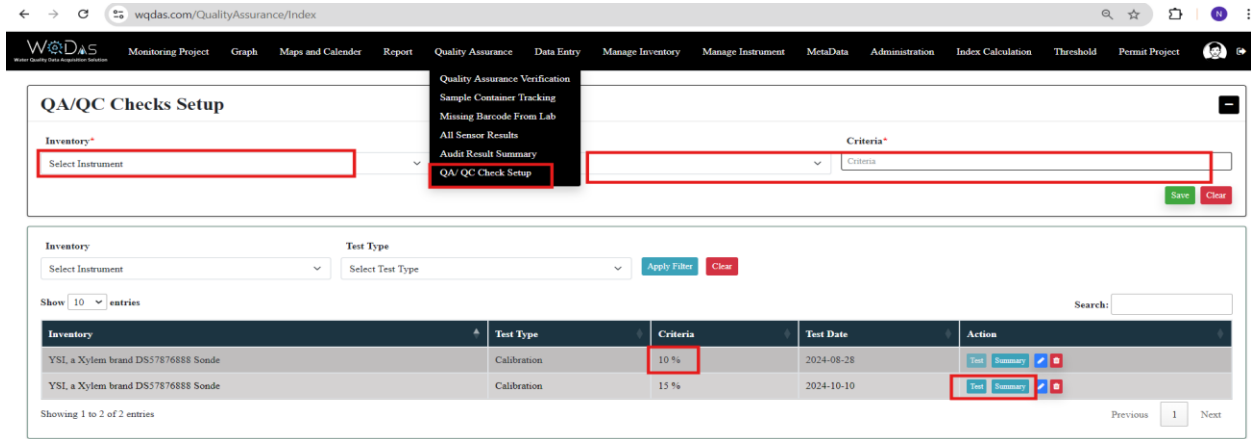


Figure 56 Instruments maintenance record tracking

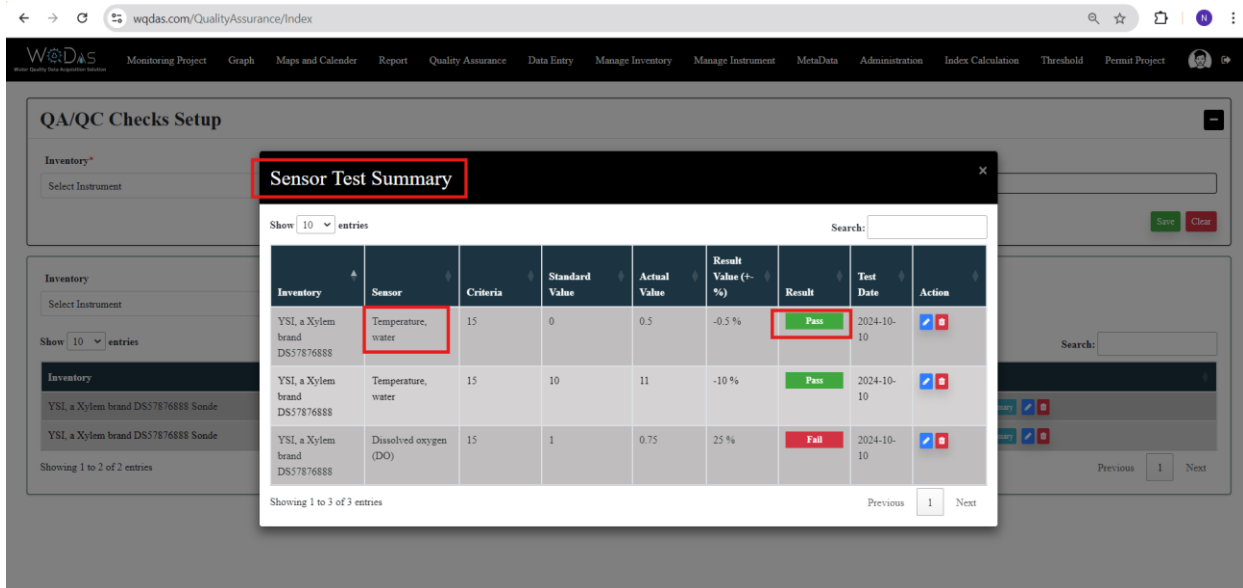


Figure 57 Instruments Precision check and calibration tracking

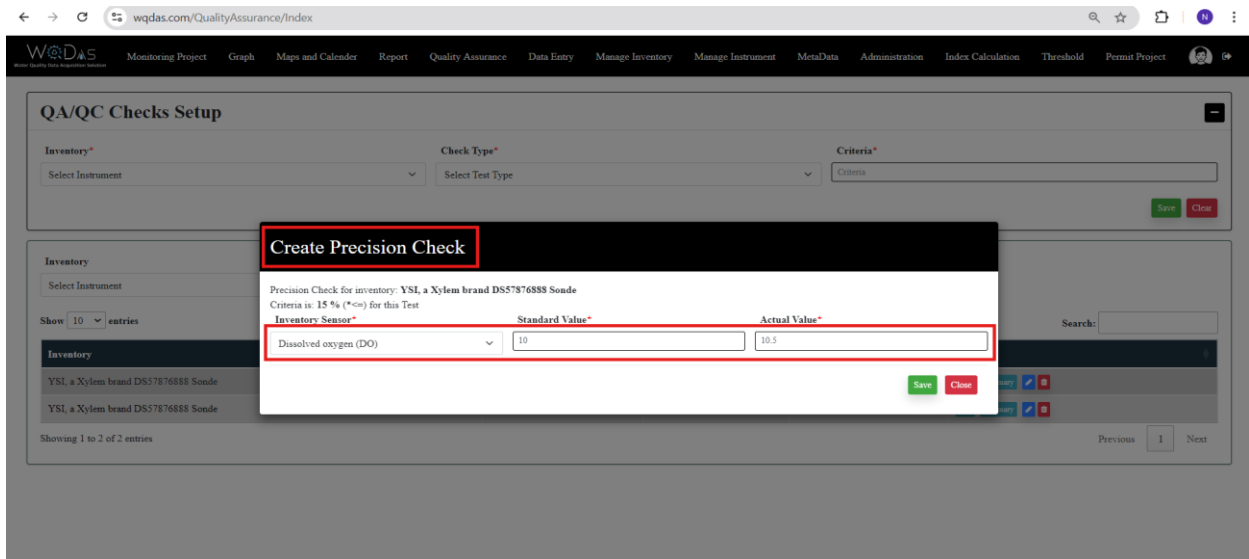


Figure 58 Precision Check data entry

Graphs

Long Term Analysis

Graph one parameter and multiple locations

In this graph, users can select a single parameter and compare it across multiple locations. They can choose any date range for the comparison. Users can also select or deselect any parameter by clicking on the parameter name in the legend.

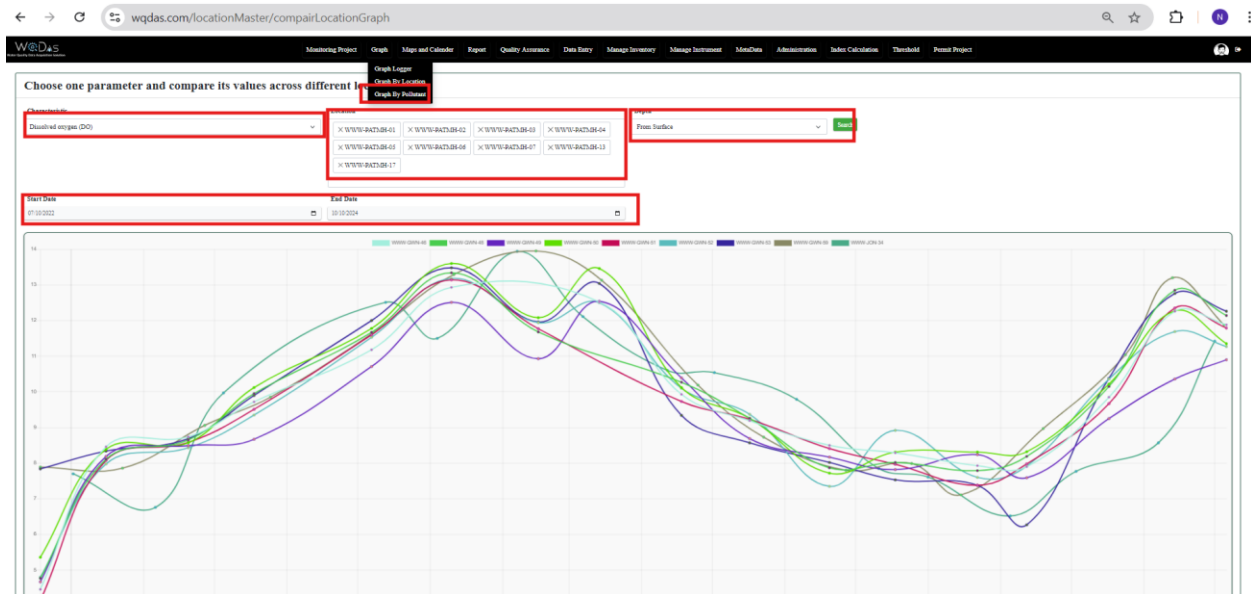


Figure 59 Long term analysis graph for one parameter at different locations

Long Term Analysis

Graph one Location and multiple parameter

In this graph, users can create a visual representation for a specific location to observe how different parameters interact with one another and how one parameter affects another. They can select or deselect any parameter by clicking on the parameter name in the legend.

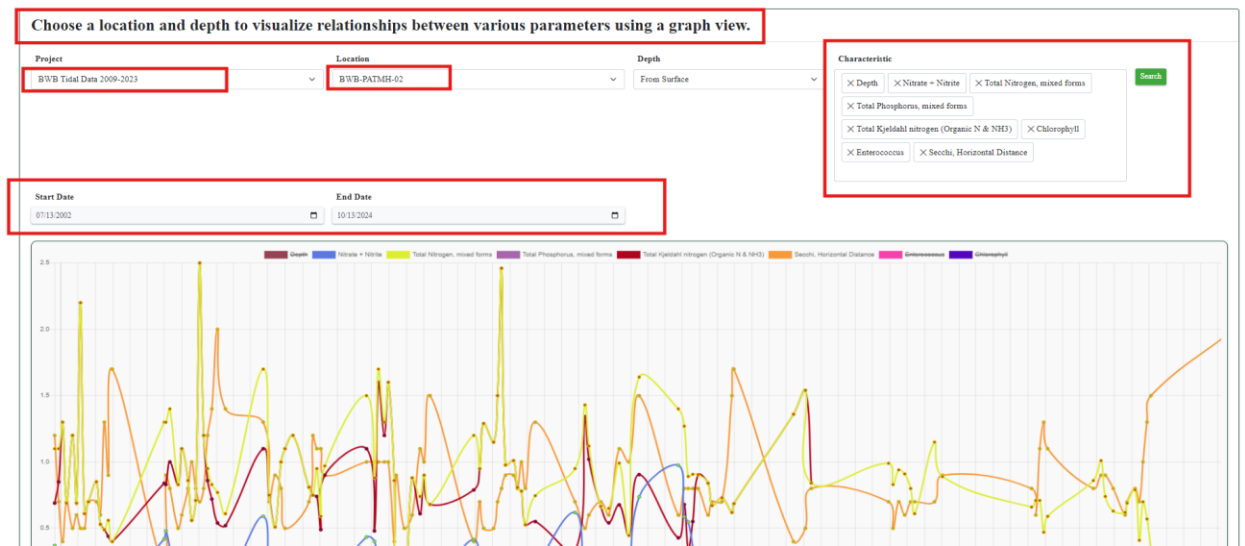


Figure 60 Long term analysis for one location for all the parameters

Continuous Logger Comparison of All the Parameters at One Location

In this graph, users can create time series for continuous data at a specific location. They can select or deselect any parameter by clicking on the parameter name in the legend.

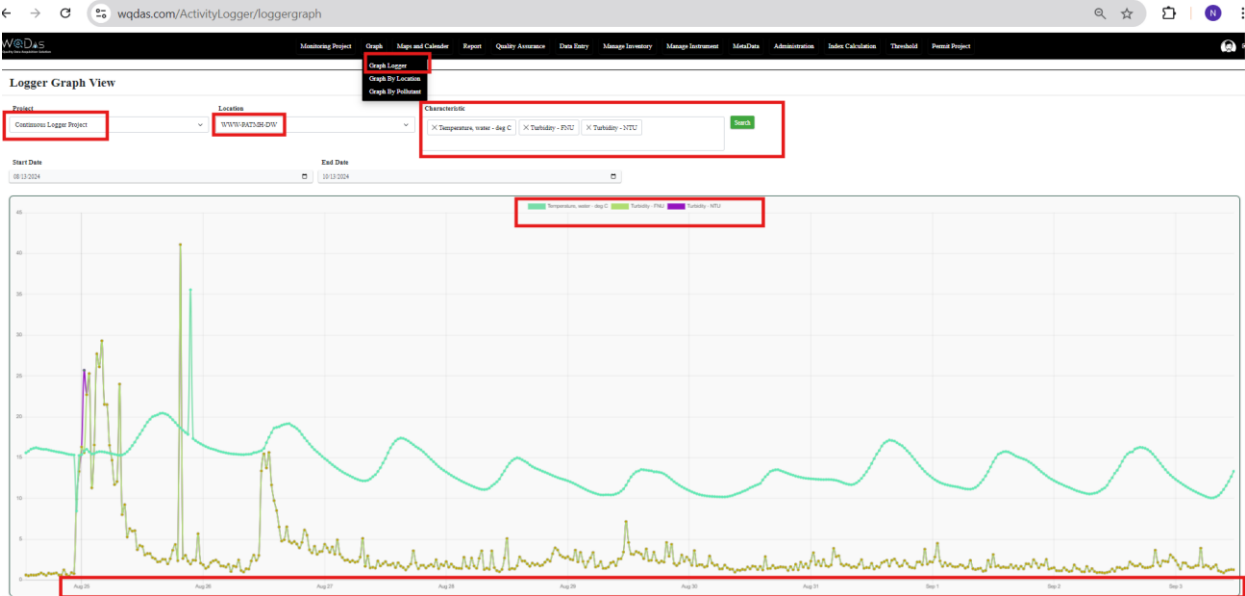


Figure 61 Continuous Logger time series for one location with all the parameters

Reports

Users can run different reports to run different statistics.

Project Activity Report

In this report, users can view the number of samples collected as “Routine” and “Quality Control Sample Duplicate” for any given year across multiple locations. This report assists in assessing whether the quality control criteria for duplicates are being met.

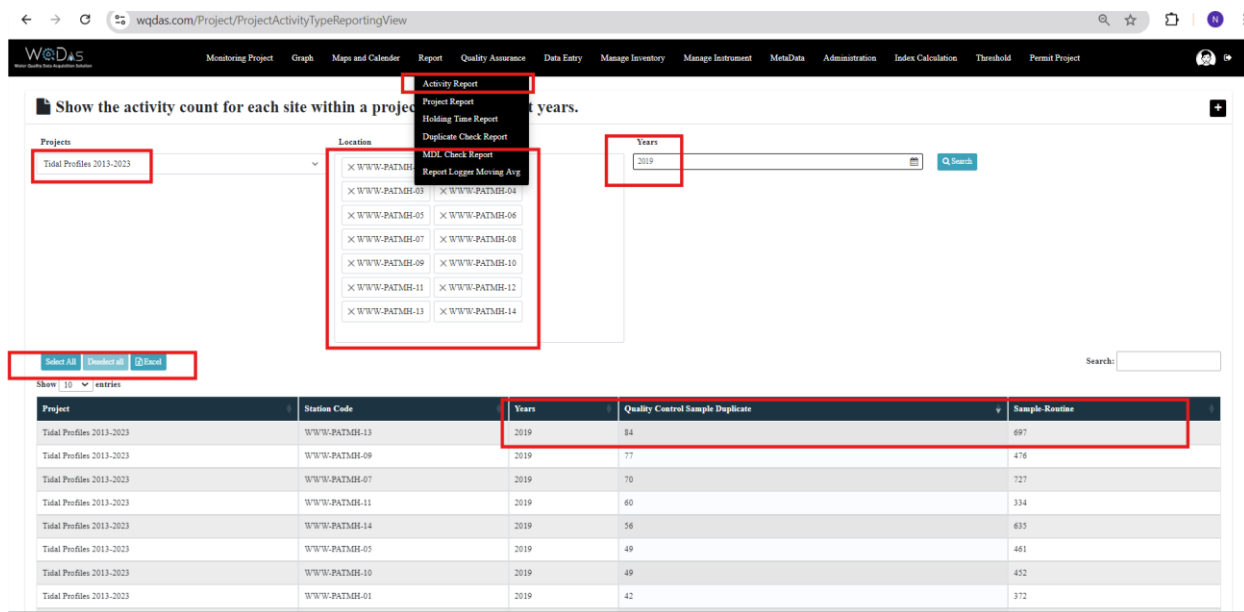


Figure 62 Report on activities at each location for one year

Project Exceedance Report

Users can run this report to obtain the total count of data points for one year, along with the counts of low and high values based on percentage criteria. If the \pm percentage falls outside the specified criteria, it will be highlighted. For example, for pH, if the acceptable low value is 6 and the high value is 8, with a $\pm 15\%$ criterion, any value outside this range will be highlighted. In other cases, users can specify one value (either high or low) as required, while the other remains optional.

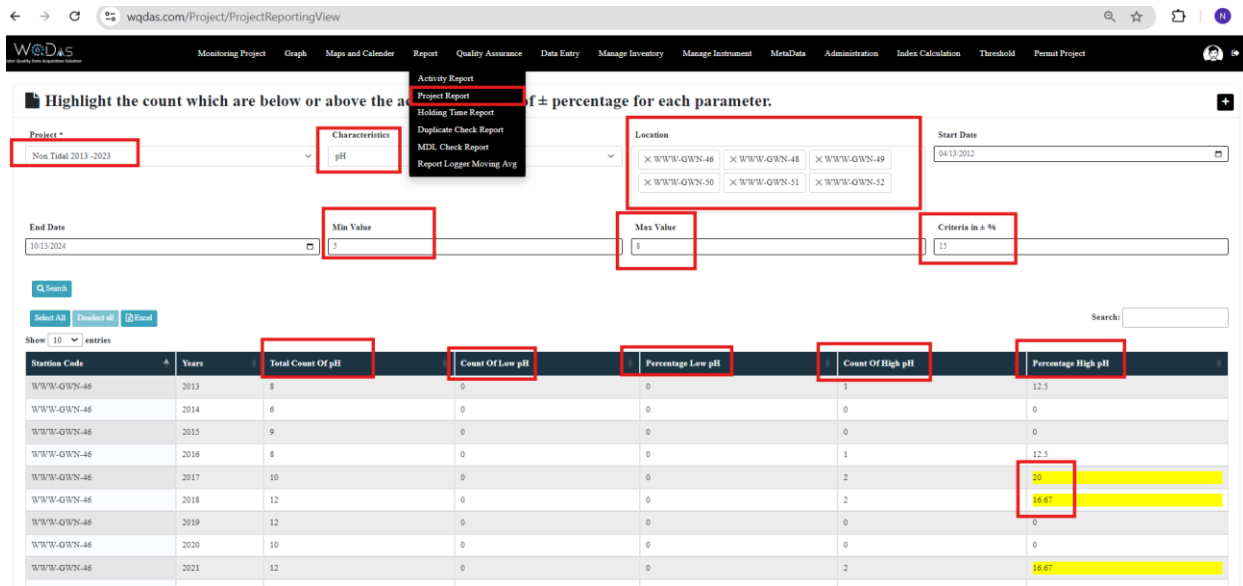


Figure 63 Report for counts for exceedance for each individual parameter over the time

Holding Time Report

In this report, users can view the number of samples that exceed the holding time criteria set by the project manager in the “Project Sample Study Plan.” The report calculates the difference between the sample collection date and time and the analysis start date and time. If this difference exceeds the holding time criteria, it will be highlighted.

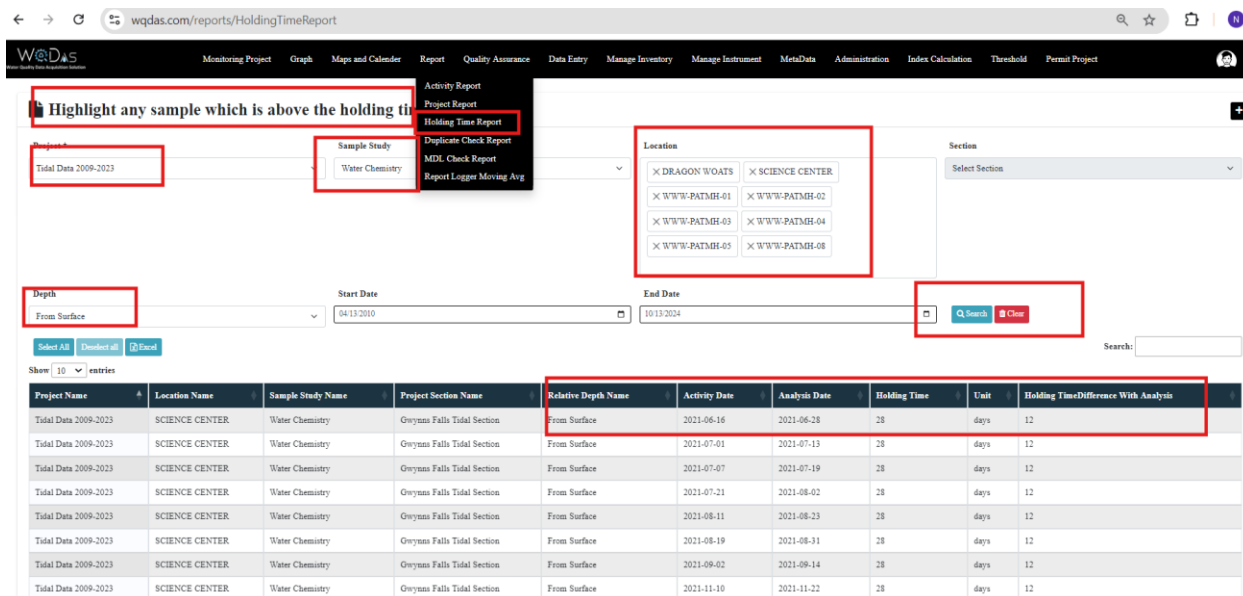


Figure 64 Holding time report

Duplicate Check Report

In this report, users can compare duplicate samples with routine sample results. Results that fall within the specified range are deemed acceptable; otherwise, they will be highlighted. Users must input acceptable low and high range values.

The screenshot shows the 'Duplicate Check Report' interface. The title is 'Comparison report between Routine samples and Duplicate samples considering the percentage difference (\pm)'. The project is 'Tidal Profiles 2013-2023' and the characteristic is 'Dissolved oxygen'. The location is 'DRAGON WOATS' and 'SCIENCE CENTER'. The start date is 04/13/2012 and the end date is 10/13/2024. The low percentage is 15 and the high percentage is 15. The table below shows the results:

Project Name	Characteristic Name	Station Code	Relative Depth	Activity Start Date	Sample Routine	Quality Control Sample Duplicate	Result
Tidal Profiles 2013-2023	Dissolved oxygen (DO)	W'W'W-PATMH-01	From Surface	10/30/2019	9.74	11.39	15.62
Tidal Profiles 2013-2023	Dissolved oxygen (DO)	W'W'W-PATMH-01	From Surface	10/30/2019	9.74	11.39	15.62
Tidal Profiles 2013-2023	Dissolved oxygen (DO)	W'W'W-PATMH-01	From Surface	10/30/2019	10.45	11.39	-8.61
Tidal Profiles 2013-2023	Dissolved oxygen (DO)	W'W'W-PATMH-01	From Surface	10/30/2019	10.45	11.39	-8.61
Tidal Profiles 2013-2023	Dissolved oxygen (DO)	W'W'W-PATMH-01	From Surface	10/30/2019	10.67	11.39	-6.53
Tidal Profiles 2013-2023	Dissolved oxygen (DO)	W'W'W-PATMH-01	From Surface	10/30/2019	10.67	11.39	-6.53

Figure 65 Duplicate Check Report

MDL Check Report

If the laboratory provides the Minimum Detection Limit (MDL) value for each parameter along with the results, you can run this report to check if any result values meet the \pm criteria for comparison. Results that fall above or below the criteria will be highlighted.

The screenshot shows the 'MDL Check Report' interface. The title is 'Comparison report between actual concentration and MDL values, highlighting any results that fall outside the acceptable range of the specified percentage (\pm)'. The project is 'Fish Tissue Project' and the characteristic is 'Calcium oxide'. The location is 'DRAGON WOATS' and 'W'W'W-PATMH-22'. The start date is 04/13/2024 and the end date is 10/13/2024. The minimum percentage is 15 and the maximum percentage is 15. The table below shows the results:

Project Name	Characteristic Name	Location Name	Relative Depth	Activity Type Name	Activity Start Date	Method Code Name	MDL Value	Result Measure Value	Measure Value Unit	Difference Result
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Figure 66 MDL Checks Report

Logger Moving Average Report

In this report, users can generate hourly averages, as well as 8- and 12-hour running averages, for a specific parameter at a designated location.

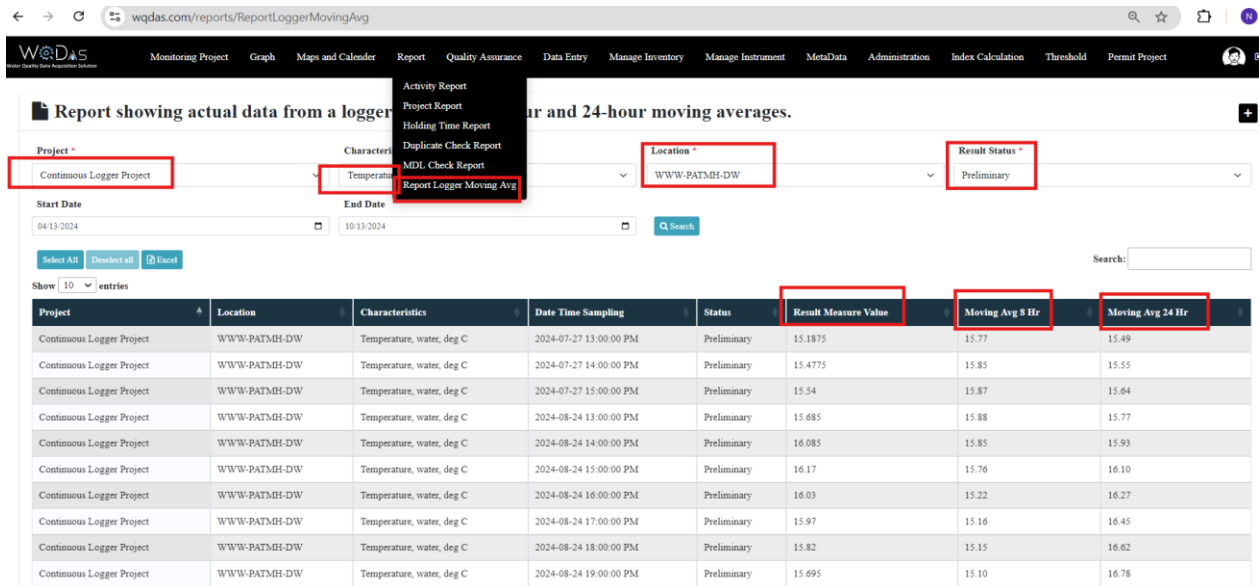


Figure 67 Logger Averages

Index Auto Calculation

WQDas does auto calculations after entering the data for census for macroinvertebrates or fish. All the metadata for auto calculation is already fed into the threshold table.

BIBI Scores

WQDas automatically performs calculations after field staff enter data for the macroinvertebrate census. It is the responsibility of the field staff to accurately identify the bugs and mention about include or exclude them from the calculations.

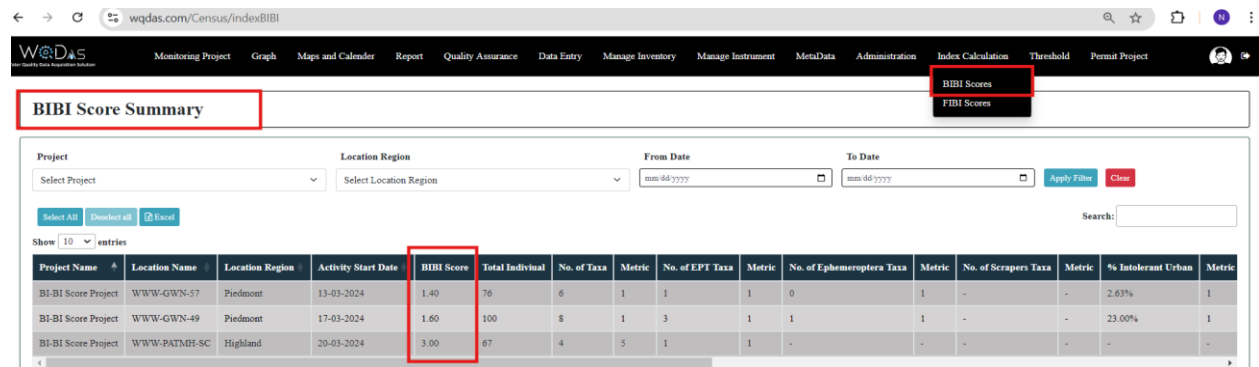


Figure 68 BIBI scores

FIBI Scores

WQDas automatically performs calculations after field staff enter data for the fish census. It is the responsibility of the field staff to accurately identify the fish and provide any additional information on the data entry sheets.

If it needs to include or exclude from the calculations

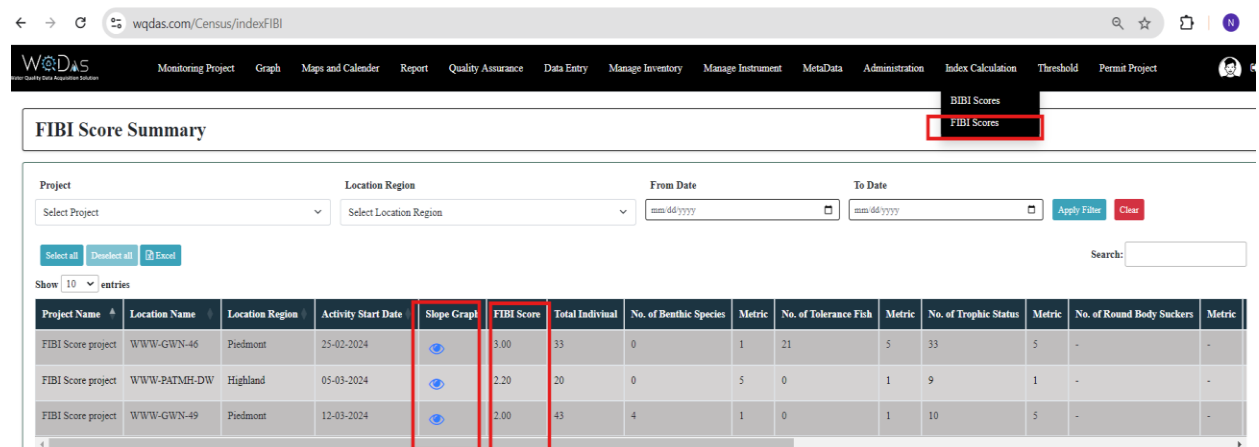


Figure 69 FIBI scores

Stream width graph for slope and intercept .

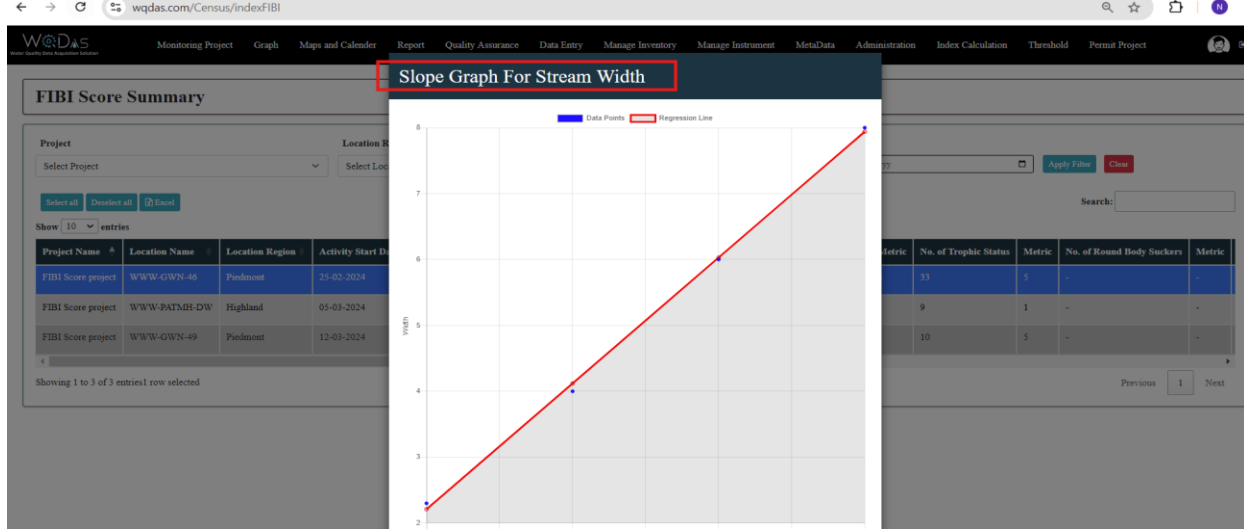


Figure 70 Slope graph for stream width for FIBI calculations

Threshold Criteria for BIBI or FIBI Scores

Project managers need to set the threshold criteria for BIBI and FIBI scores only once. After this initial setup, WQDas will automatically populate all FIBI and BIBI indices whenever field staff enter census data, based on the established criteria.

The screenshot shows the 'Taxon Threshold Setup' page in the WQDas application. The page includes a search bar and a table with columns for 'Sample Study', 'Location Region', 'Name', 'Less Than Threshold', 'Less Than Threshold Value', 'More Than Equal Threshold', 'More Than Equal Threshold Value', and 'Action'. The first row of the table is highlighted with a red box.

Sample Study	Location Region	Name	Less Than Threshold	Less Than Threshold Value	More Than Equal Threshold	More Than Equal Threshold Value	Action
BIBI Scores	Piedmont	Number of taxa	15	1	24	5	[Action]
BIBI Scores	Piedmont	Number of EPT taxa	15	1	14	5	[Action]
BIBI Scores	Piedmont	Number of Ephemeroptera taxa	3	1	5	5	[Action]
BIBI Scores	Piedmont	% Intolerant Urban Individuals	38	1	80	5	[Action]
BIBI Scores	Piedmont	% Tanytarsini Individuals	0.1	1	4	5	[Action]
BIBI Scores	Piedmont	% Scrapers Individuals	3	1	13	5	[Action]
BIBI Scores	Piedmont	% Swimmers Individuals	3	1	18	5	[Action]
BIBI Scores	Piedmont	% Diptera Individuals	26	5	50	1	[Action]
BIBI Scores	Costal Plain	Number of taxa	14	1	22	5	[Action]
BIBI Scores	Costal Plain	Number of EPT taxa	2	1	5	5	[Action]

Figure 71 Threshold Criteria for BIBI or FIBI Scores

Instrument Inventory Management

This module enables users to manage all instruments used within the organization. It tracks each instrument's certification status and identifies the individual responsible for its custody.

Adding a New Instrument to Inventory Management System

In this module, each instrument is tracked along with its sensors and certification status. To add a new instrument, users must provide the manufacturer name, model number, and serial number. Additionally, users need to indicate whether the instrument is multi-sensor or single-sensor and confirm its active status in the inventory.

The screenshot displays the WQDAS web application interface. At the top, the navigation menu includes: Monitoring Project, Graph, Maps and Calendar, Report, Quality Assurance, Data Entry, Manage Inventory, Manage Instrument, MetaData, Administration, Index Calculation, Threshold, and Permit Project. The 'Manage Inventory' menu is expanded, showing options: Create Inventory, Assign Sensor to Inventory, Assign Inventory to Members, and Assign Inventory History. The 'Create Inventory Setup' form is visible, with fields for: Ins Serial Number* (Serial Number), Ins Barcode* (Barcode), Ins Model* (Select Manufacture), Ins Type* (Select Type), Valid Certificate Date* (mm/dd/yyyy), Model Multi Sensor* (Select MultiSensor), and Active* (Select Active). There are 'Save' and 'Clear' buttons at the bottom right of the form. Below the form is a table showing a list of inventory items. The table has columns: Manufacturer, Model, Ins Serial Number, Ins Barcode, Ins Type, Certificate Valid, Multi Sensor, Active, and Action. The 'Multi Sensor' column contains 'Yes' and 'No' values, with an 'eye' icon next to 'Yes' entries. The 'Active' column contains 'Yes' and 'No' values. The 'Action' column contains edit and delete icons.

Manufacturer	Model	Ins Serial Number	Ins Barcode	Ins Type	Certificate Valid	Multi Sensor	Active	Action
Eureka h	Eureka Continuous Logger	734543	8565465	Logger	2020-01-01	Yes	Yes	[edit] [delete]
In-Situ	MS5	5345436	1702556	Sonde	2024-09-14	Yes	Yes	[edit] [delete]
In-Situ	MS5	334549	566444	Sonde	2024-09-14	Yes	Yes	[edit] [delete]
In-Situ	DS5	8789785	1096895582	Sonde	2024-09-14	Yes	Yes	[edit] [delete]
Jenco	Omega's DO	1231243	3243242	Disk	2024-01-01	No	Yes	[edit] [delete]
Jenco	Omega's DO	7231243	67657	Disk	2024-01-01	No	Yes	[edit] [delete]
Jenco	Omega's DO	734542	8565462	Disk	2024-01-01	No	Yes	[edit] [delete]
YSI, a Xylem brand	DS5	4535345	7876888	Sonde	2024-01-01	Yes	Yes	[edit] [delete]

Figure 72 How to add new inventory for tracking

If the instrument is multi-sensor, the user can click on the "eye" icon to view the details in a popup.

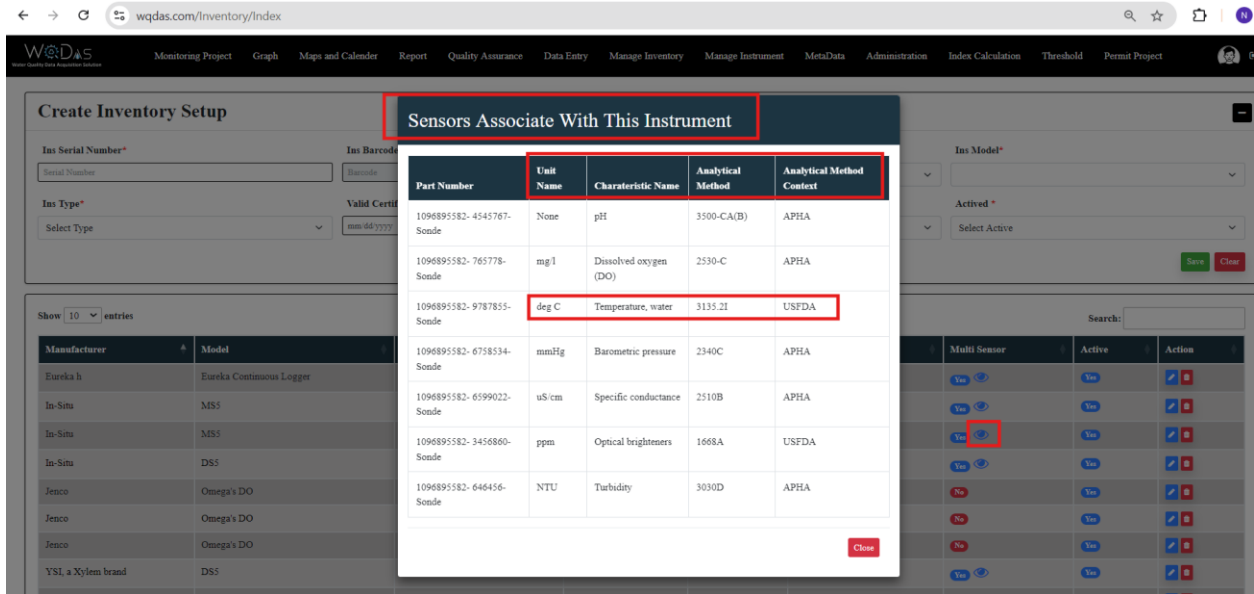


Figure 73 Instruments Sensor's details

Inventory Assigned to a Team Members

On this screen, the project manager can assign instruments to team members. If the project manager later needs to unassign an instrument and reassign it to someone else, this can also be done on the same screen.

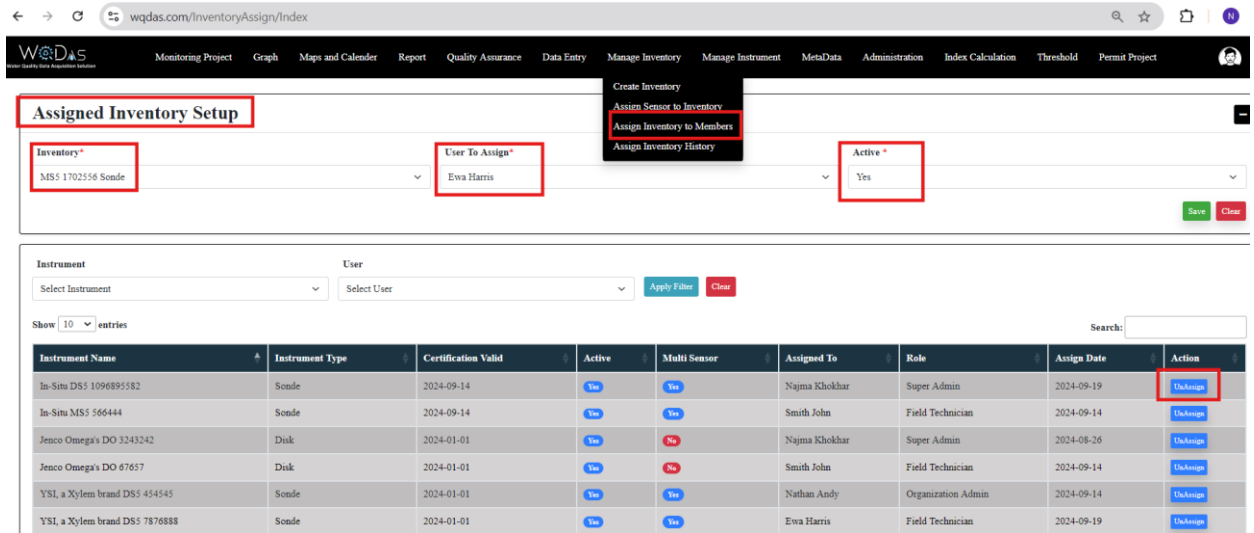


Figure 74 How to assign each instrument to individual users or team members

History for Instruments Assignments

The screenshot shows the 'Inventories Assigned History Setup' page. At the top, there is a navigation menu with options like 'Monitoring Project', 'Graph', 'Maps and Calendar', 'Report', 'Quality Assurance', 'Data Entry', 'Manage Inventory', 'Manage Instrument', 'MetaData', 'Administration', 'Index Calculation', 'Threshold', and 'Permit Project'. A dropdown menu is open, showing 'Create Inventory', 'Assign Sensor to Inventory', 'Assign Inventory to Members', and 'Assign Inventory History' (highlighted with a red box). Below the dropdown, there are two dropdown menus for 'Instrument' and 'User', with 'Apply Filter' and 'Clear' buttons. A table displays the history of assignments with the following data:

Instrument	Assigned User	Role	Assign Date	UnAssign Date
In-Situ MS5 1702556	Samira Tom	Quality Assurance	2024-06-24	2024-09-14
In-Situ MS5 1702556	Ewa Harris	Field Technician	2024-09-14	2024-09-19

The table also includes a 'Show 10 entries' dropdown, a search bar, and pagination controls (Previous, 1, Next). The 'Instrument', 'Assigned User', 'Assign Date', and 'UnAssign Date' columns are highlighted with red boxes.

Figure 75 Inventory tracking for user assignments

User Management

The organization's administrator will manage all user rights and privileges. This system is role-based, with each user assigned a specific role. The primary roles include "Super Admin," "Organization Admin," "Project Manager," "Field Staff," "Auditor," "Quality Assurance Officer," and "Standard User." Each role has its own dashboard, tailored to their specific responsibilities and privileges.

Name	Username/Email	Organization	Active	Role	Phone Number	Action
Najmakhokhar@gmail.com	Najmakhokhar@gmail.com	Innovated Tech	Yes	Standard User	4107829923	
tech.zone.columbia@gmail.com	tech.zone.columbia@gmail.com	Innovated Tech	Yes	Quality Assurance	24343423433	

Figure 76 User management system for the organization

Role Based System

This is the list of roles recommended for an organization to have for each project.

Name	Active	Action
Standard User	Yes	
Auditor	Yes	
Super Admin	Yes	
Quality Assurance	Yes	
Project Lead	Yes	
Org Admin	Yes	
Field Technician	Yes	

Figure 77 All users have an assigned role in the organization

Screen Permission for Different Roles

Only the super admin has the authority to assign different permissions to various roles.

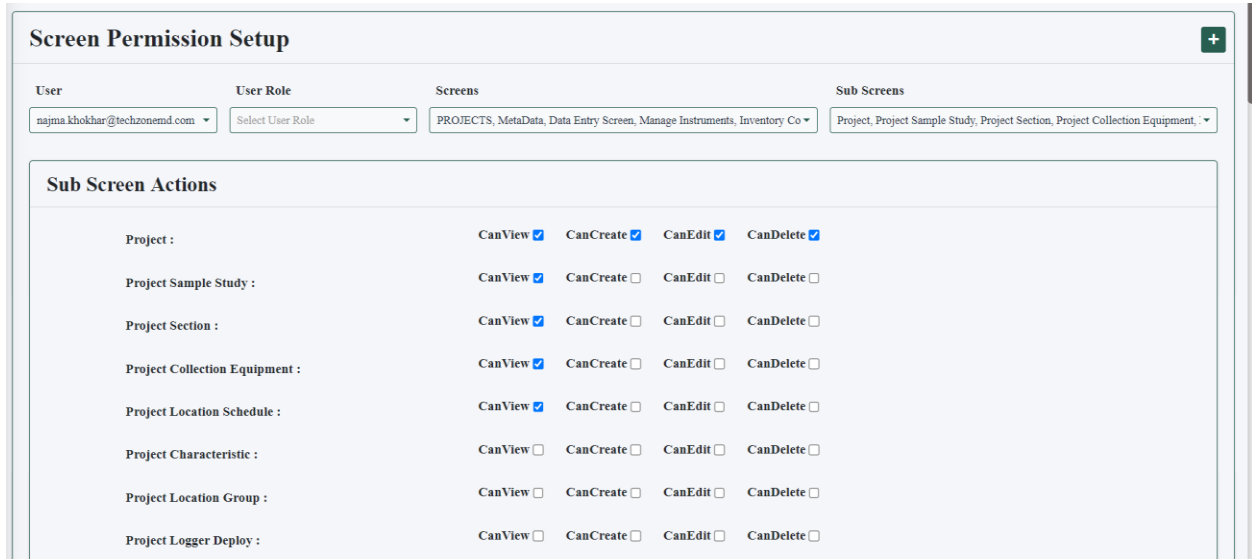


Figure 78 Each role has assigned privileges to access different pages in the WQDas

Teams

Project managers can create various teams and assign them to different sections of a project. They can also monitor each team's performance and track their responsibilities.

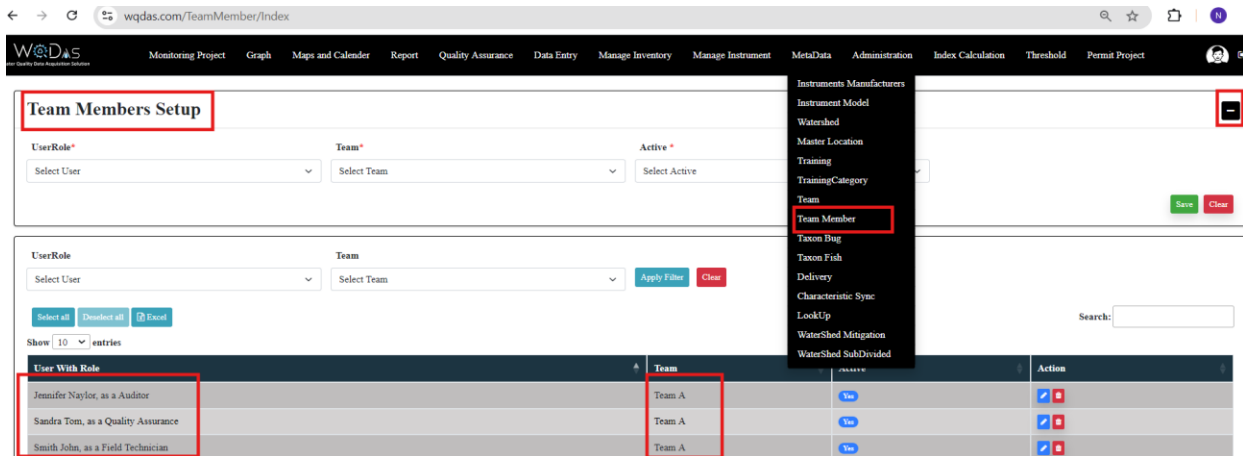


Figure 79 Each Team has different member assign to different project sections

Training Tracking for Members

The project manager can track the training status of all team members. If anyone requires retraining, they can request additional training.

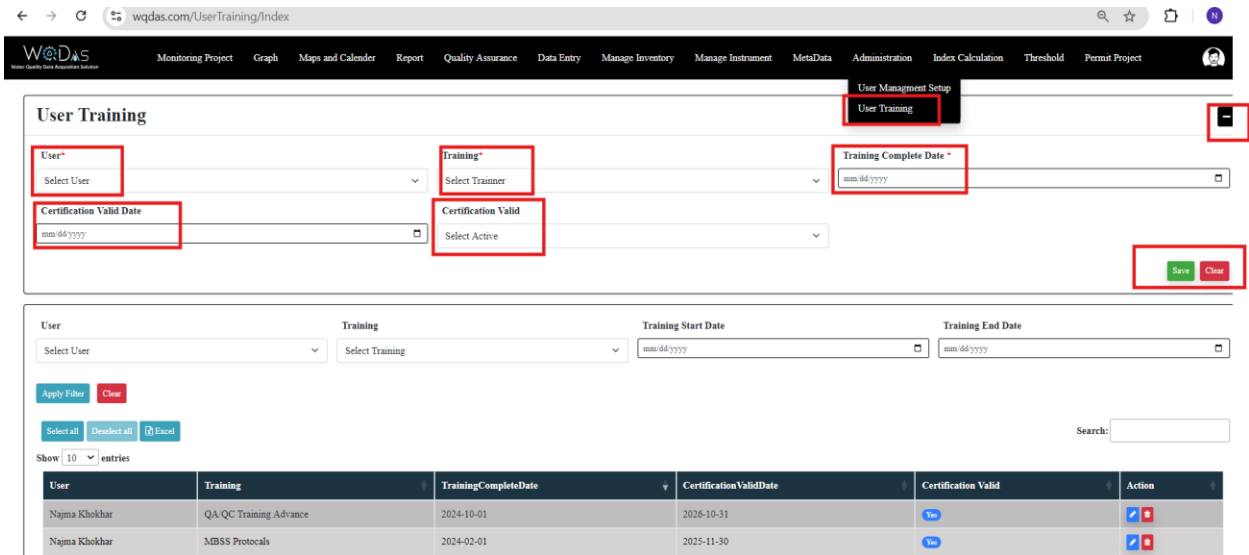


Figure 80 Training tracking for employees

Project Time Tracking for Employees

The project manager can track the time of each employee spending on different activities for any project to get billable hours.

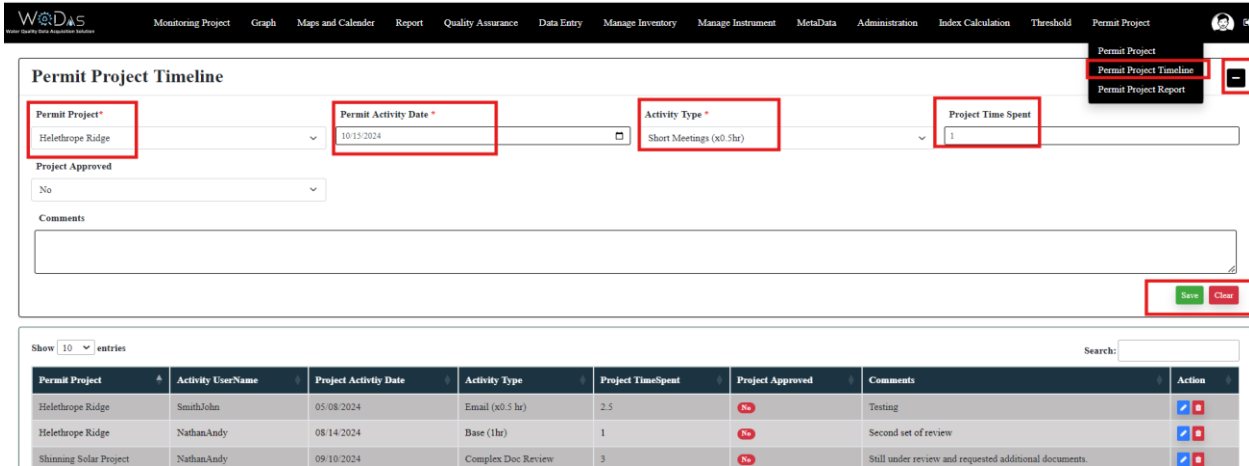


Figure 81 Project Time Tracking