TestTheWater.org

an Online Water Data Management System

4Marbles Inc. Team Members:
Luke Warren | Justus Bingham | Zak Skrivanek | Helen Fletcher | Lee Tremblay

Introduction

Products & Services

Mobile LabBook

Data records and mobile input

Data Management

Data processing

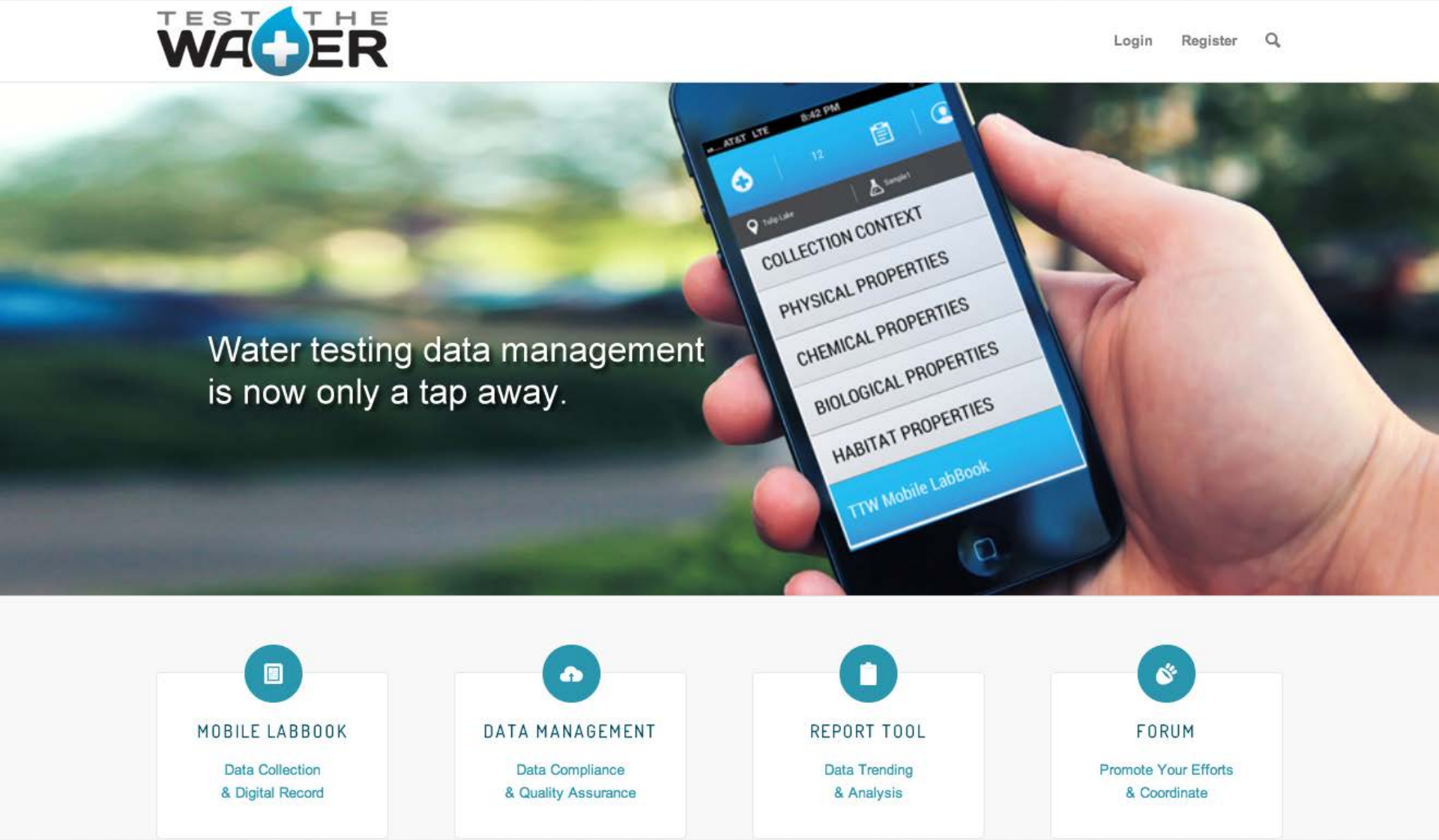
Report Tool

Data Analysis
Graphing

Forum

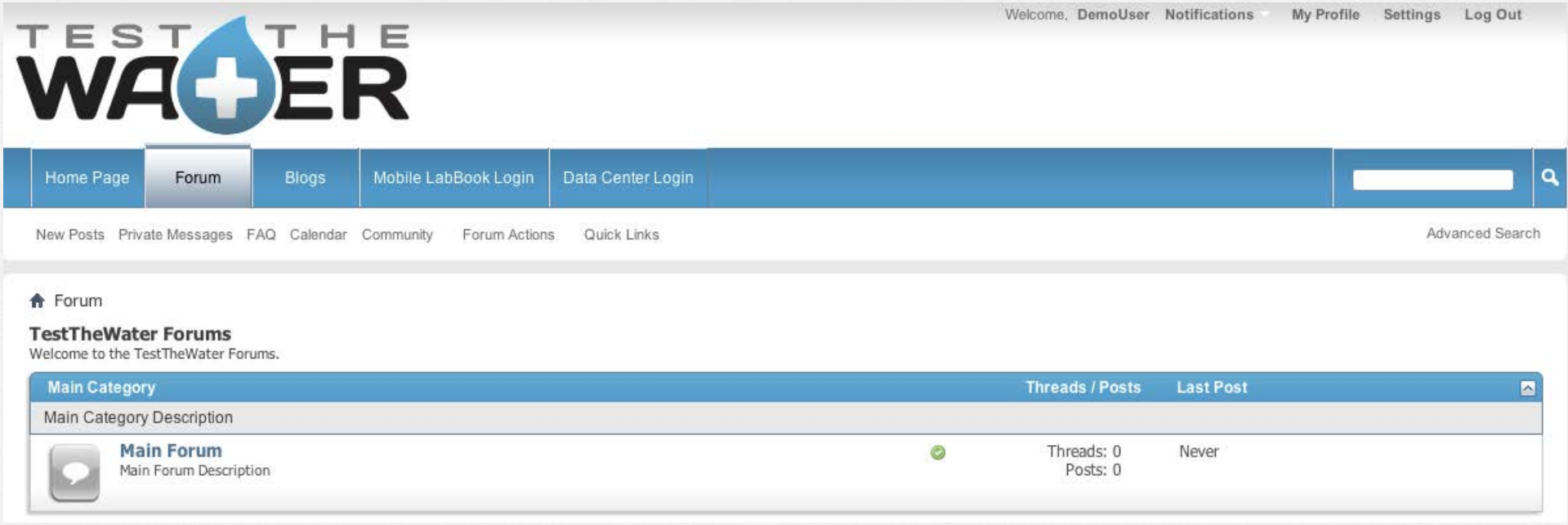
Connecting & Sharing

TestTheWater.org Website



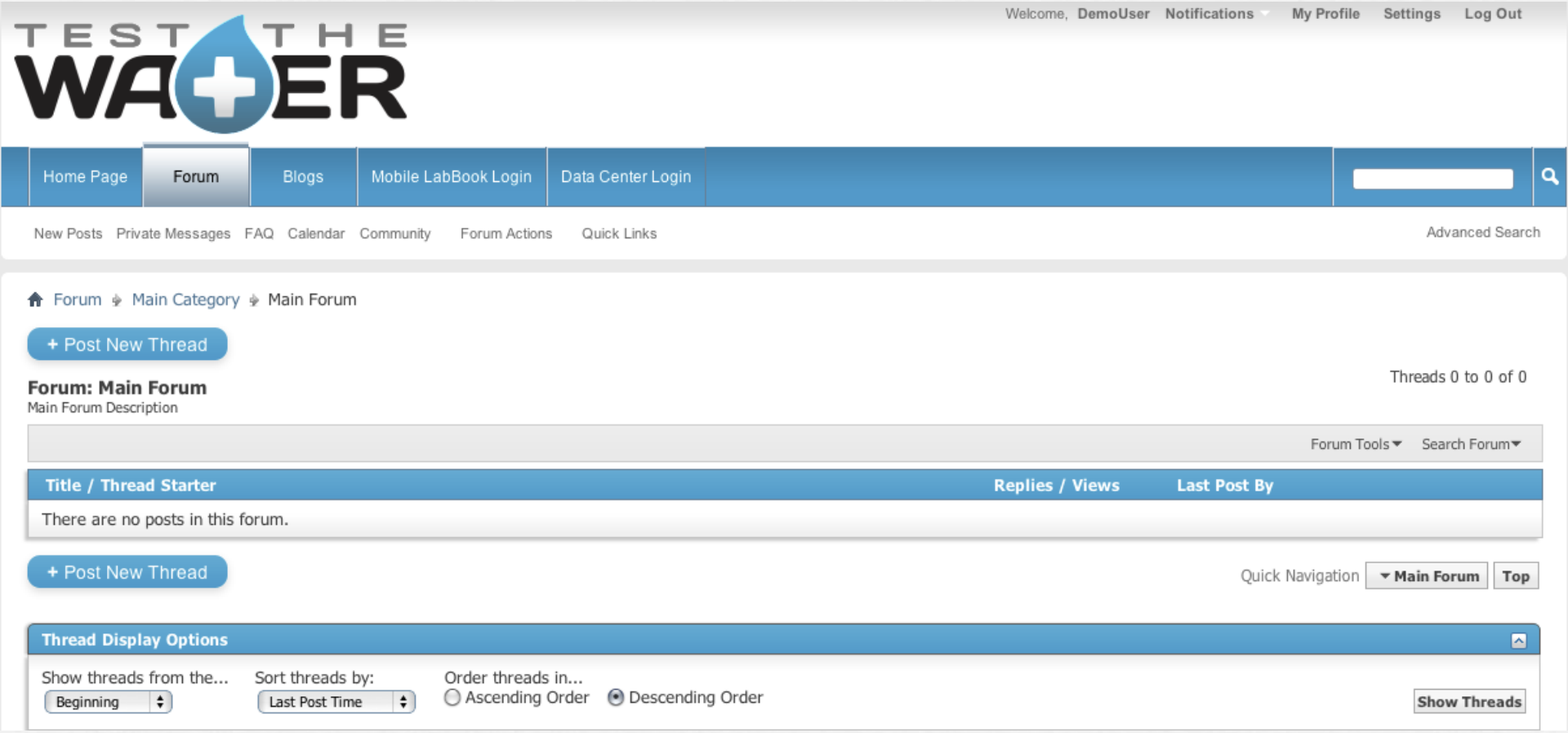
Login

TEST THE WATER
User Name
Password
Log in
Help
Register
Remember Me?
Home Page
Forum
Blogs
New Posts
FAQ
Calendar
Community
Forum Actions
Quick Links
Advanced Search


Welcome, DemoUser
Notifications
My Profile
Settings
Log Out
TEST THE WATER
Home Page
Forum
Blogs
Mobile LabBook Login
Data Center Login
New Posts
Private Messages
FAQ
Calendar
Community
Forum Actions
Quick Links
Advanced Search
Forum
TestTheWater Forums
Welcome to the TestTheWater Forums.
Main Category
Threads / Posts
Last Post
Main Category Description
Main Forum
Main Forum Description
Threads: 0
Posts: 0
Never

Forum: Currently Accessible only to Beta-testers

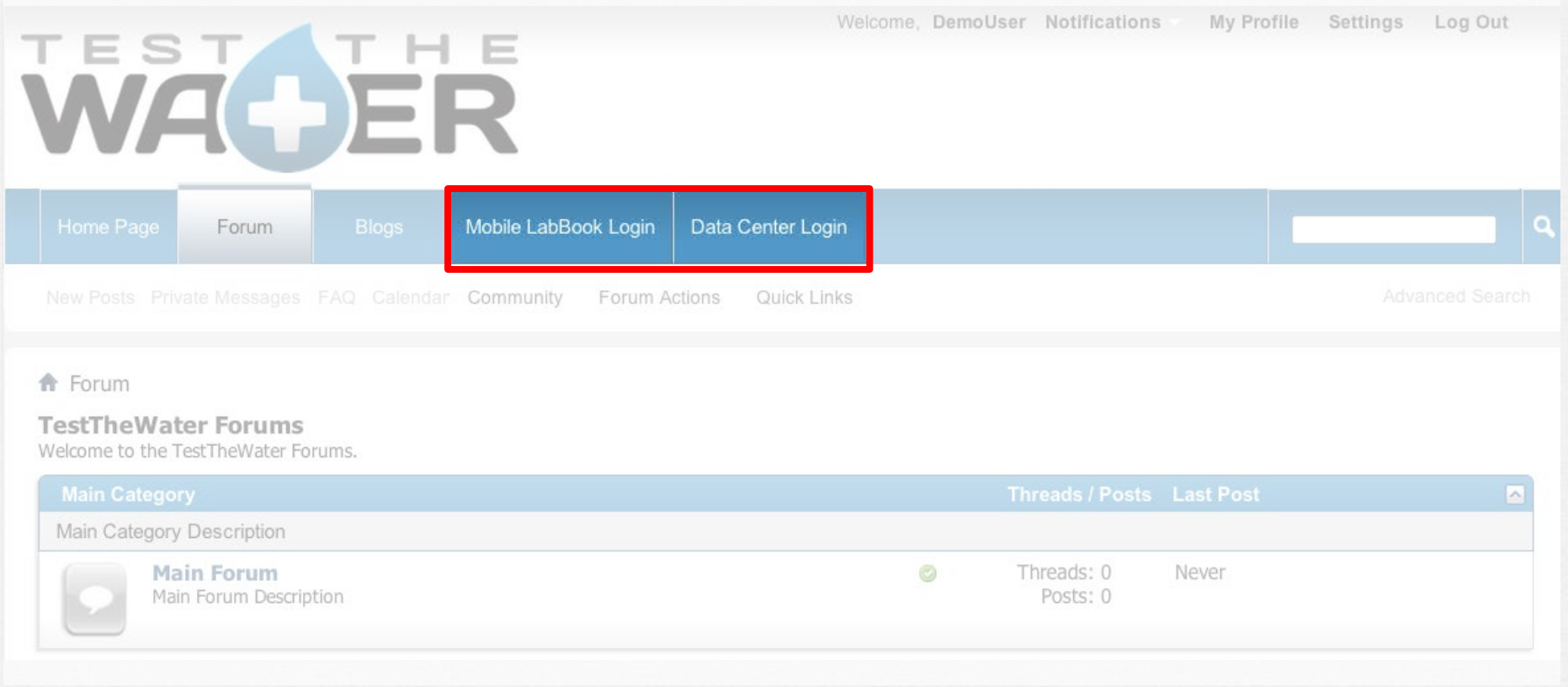
The Forum is designed to build a community focused on the importance of water data observations and to encourage collaboration amongst interested groups.



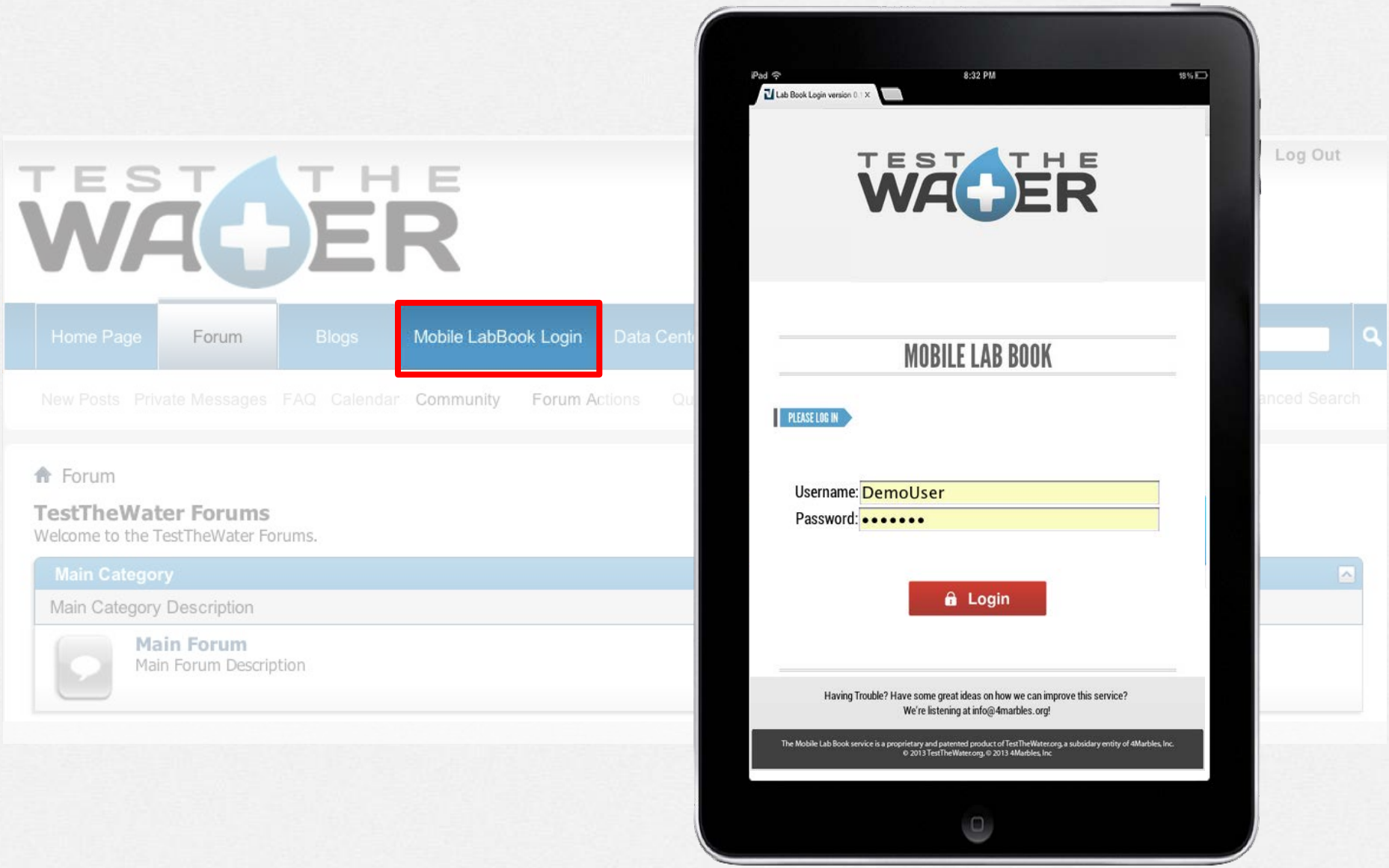
The Forum allows Users to:

- Create posts on water related topics
- Calendar for creating and coordinating events
- Pose questions, share protocols
- Create Groups for Data Collection & Management

Web App Tabs


Welcome, DemoUser Notifications My Profile Settings Log Out
Home Page
Forum
Blogs
Mobile LabBook Login
Data Center Login
New Posts Private Messages FAQ Calendar Community Forum Actions Quick Links
Advanced Search
Forum
TestTheWater Forums
Welcome to the TestTheWater Forums.
Main Category
Threads / Posts
Last Post
Main Category Description
Main Forum
Main Forum Description
Threads: 0
Posts: 0
Never

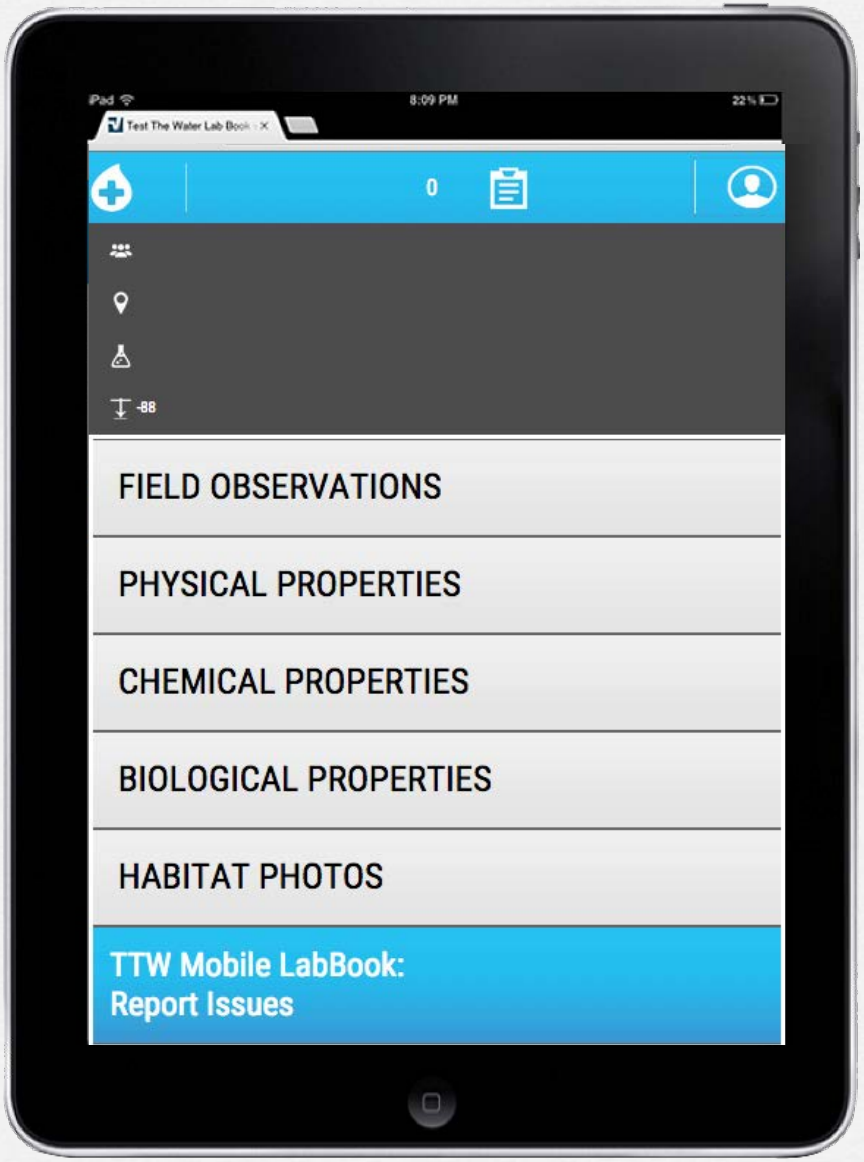
Mobile LabBook Login



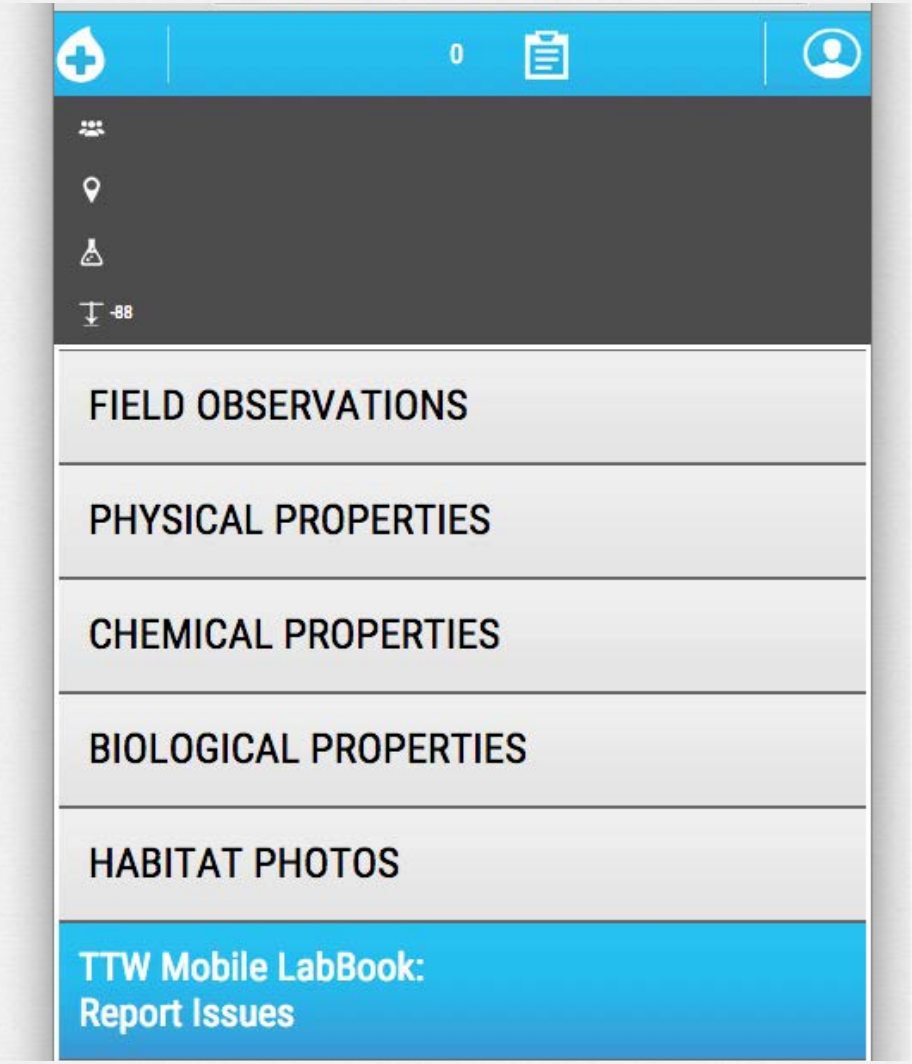
Mobile LabBook- Overview

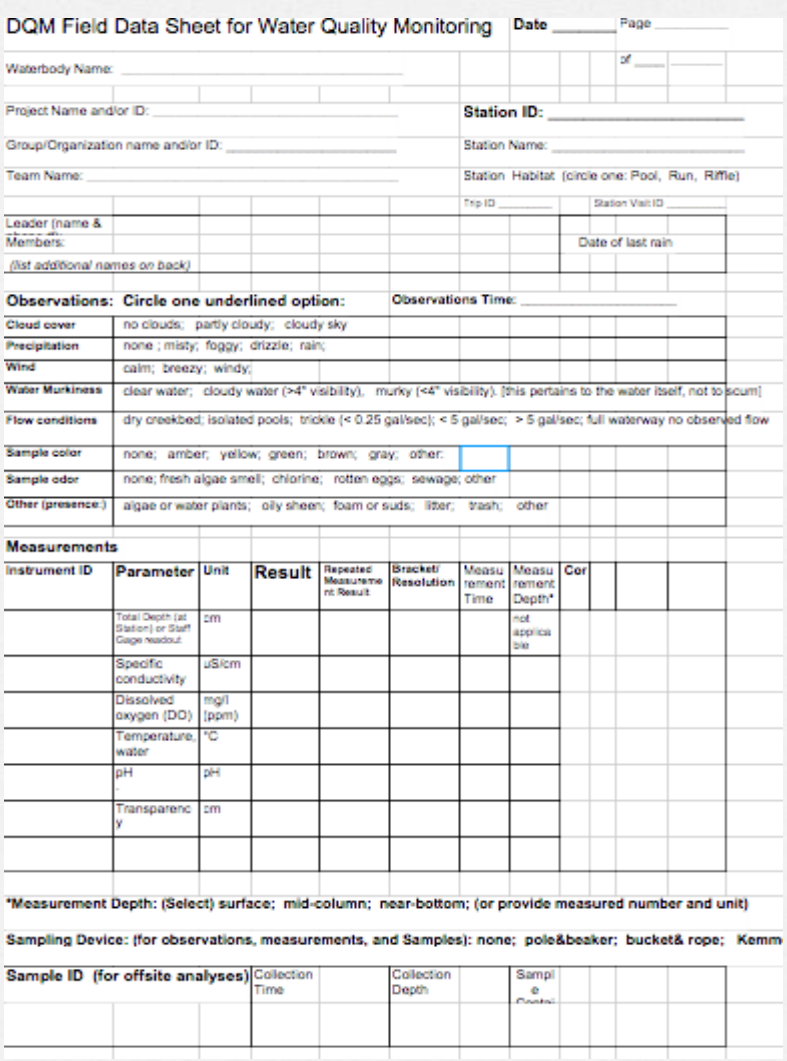
Features

- HTML5 platform flexibility useable on any smart mobile device running Chrome
- Maintains Functionality and data integrity in the absence of internet via HTML5 local device database
- User allowed data tagging with GPS coordinates and timestamp
- Data uploaded to the TTW central Server for access from any internet connected device



Mobile LabBook vs Field Data Sheet





DQM Field Data Sheet for Water Quality Monitoring Date _____ Page _____ of _____

Waterbody Name: _____

Project Name and/or ID: _____ **Station ID:** _____

Group/Organization name and/or ID: _____ Station Name: _____

Team Name: _____ Station Habitat (circle one: Pool, Run, Riffle)

Trip ID _____ Station Visit ID _____

Leader (name & Members: (list additional names on back)	Date of last rain

Observations: Circle one underlined option: **Observations Time:** _____

Cloud cover	no clouds; partly cloudy; cloudy sky
Precipitation	none ; misty; foggy; drizzle; rain;
Wind	calm; breezy; windy;
Water Murkiness	clear water; cloudy water (>4" visibility); murky (<4" visibility). [this pertains to the water itself, not to scum]
Flow conditions	dry creekbed; isolated pools; trickle (< 0.25 gal/sec); < 5 gal/sec; > 5 gal/sec; full waterway no observed flow
Sample color	none; amber; yellow; green; brown; gray; other:
Sample odor	none; fresh algae smell; chlorine; rotten eggs; sewage; other
Other (presence:)	algae or water plants; oily sheen; foam or suds; litter; trash; other

Measurements

Instrument ID	Parameter	Unit	Result	Repeated Measurement Result	Bracket/ Resolution	Measurement Time	Measurement Depth*	Cor
	Total Depth (at Station) or Staff Gage readout	cm					not applicable	
	Specific conductivity	uS/cm						
	Dissolved oxygen (DO)	mg/l (ppm)						
	Temperature, water	°C						
	pH	pH						
	Transparency	cm						

***Measurement Depth: (Select) surface; mid-column; near-bottom; (or provide measured number and unit)**

Sampling Device: (for observations, measurements, and Samples): none; pole&beaker; bucket& rope; Kemm

Sample ID (for offsite analyses)	Collection Time	Collection Depth	Sample Container

- Side by Side comparison of a traditional SWAMP field data sheet vs. the digital Mobile LabBook layout.
- WQX and SWAMP type organization of data types for user familiarity
- Lets walk through a sample data collection.....

Mobile LabBook- Required Fields

DQM Field Data Sheet for Water Quality Monitoring | Date _____ | Page _____ of ___ _____

Waterbody Name: _____

Project Name and/or ID: _____ **Station ID:** _____

Group/Organization name and/or ID: _____ Station Name: _____

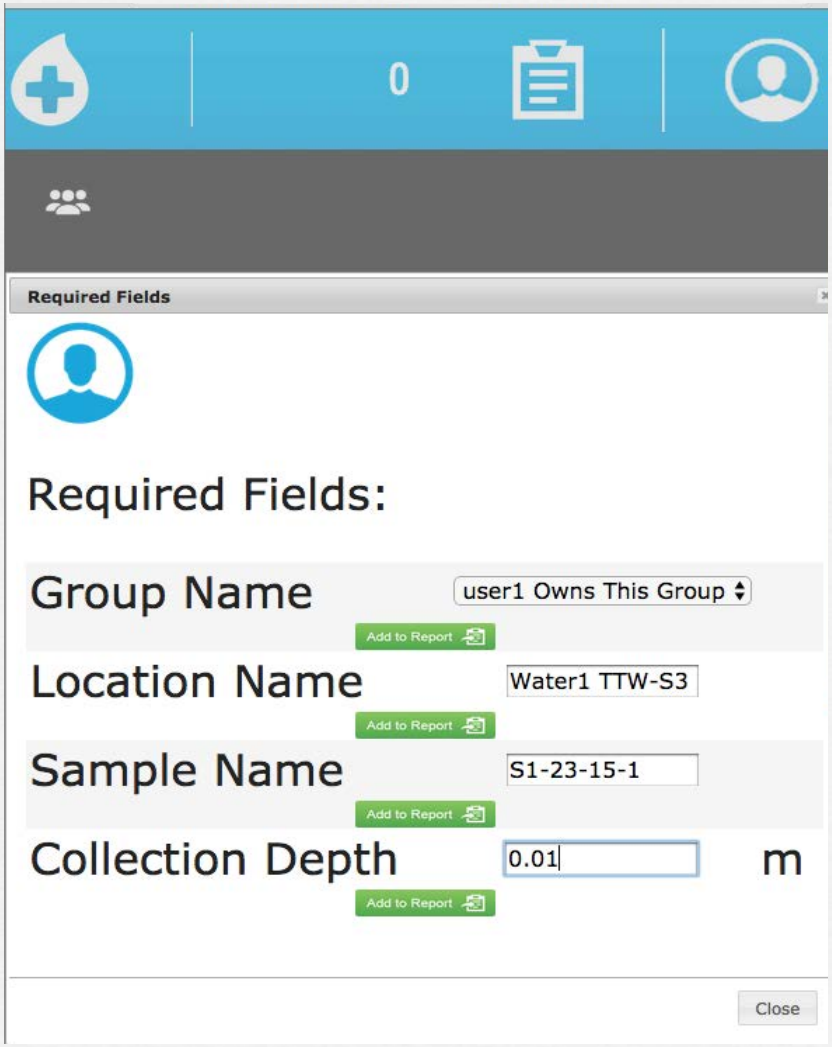
Team Name: _____ Station Habitat (circle one: Pool, Run, Riffle)

Trip ID | Station Visit ID

Leader (name & Members:

Date of last rain

(list additional names on back)



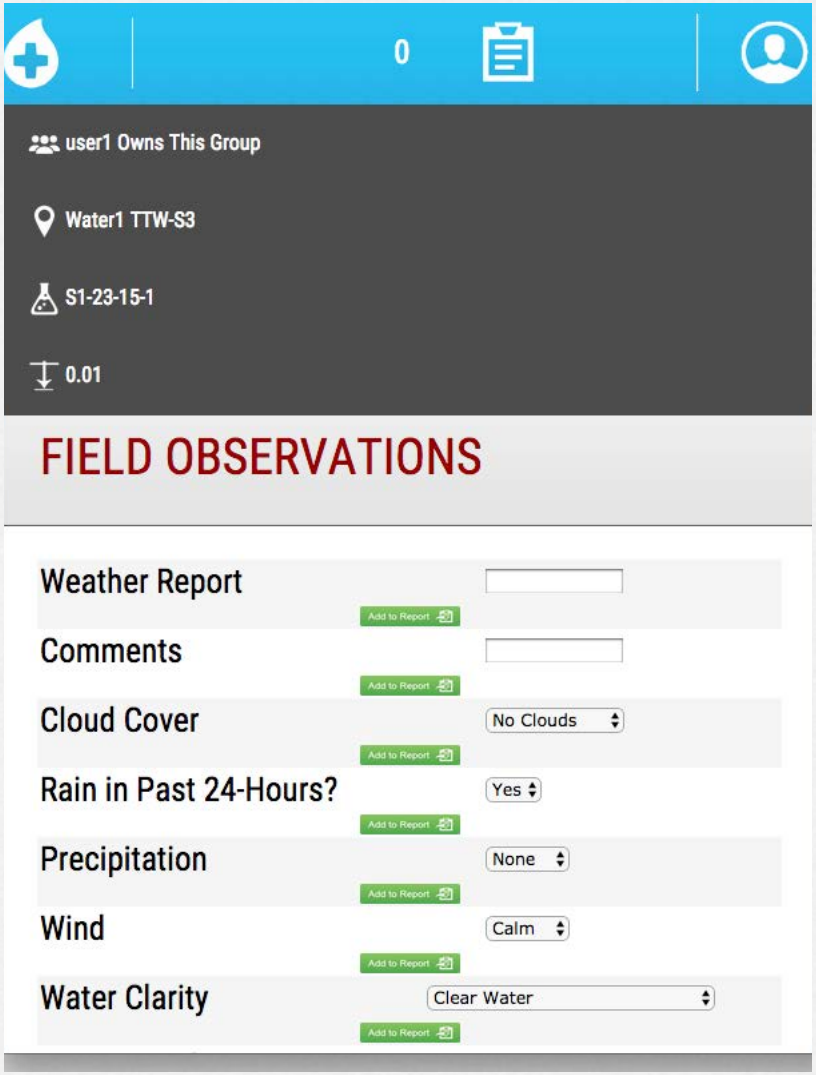
Step 1

- Tap on the grey bar and enter “Location Name”, “Sample Name” and “Group Name” (required fields), and Collection Depth as needed and click the associated ‘Add to Report’ button.
- The entered values will be displayed in the gray banner above the data collection input fields
- The advantages of TestTheWater’s relational databases eliminates the need for redundant data capture
- Examples of these data points are Station ID, group members, project information, etc.

Mobile LabBook- Recording Data

Observations: Circle one underlined option:	Observations Time: _____
Cloud cover	no clouds; partly cloudy; cloudy sky
Precipitation	none ; misty; foggy; drizzle; rain;
Wind	calm; breezy; windy;
Water Murkiness	clear water; cloudy water (>4" visibility), murky (<4" visibility). [this pertains to the water itself, not to scum]
Flow conditions	dry creekbed; isolated pools; trickle (< 0.25 gal/sec); < 5 gal/sec; > 5 gal/sec; full waterway no observed flow
Sample color	none; amber; yellow; green; brown; gray; other:
Sample odor	none; fresh algae smell; chlorine; rotten eggs; sewage; other
Other (presence:)	algae or water plants; oily sheen; foam or suds; litter; trash; other

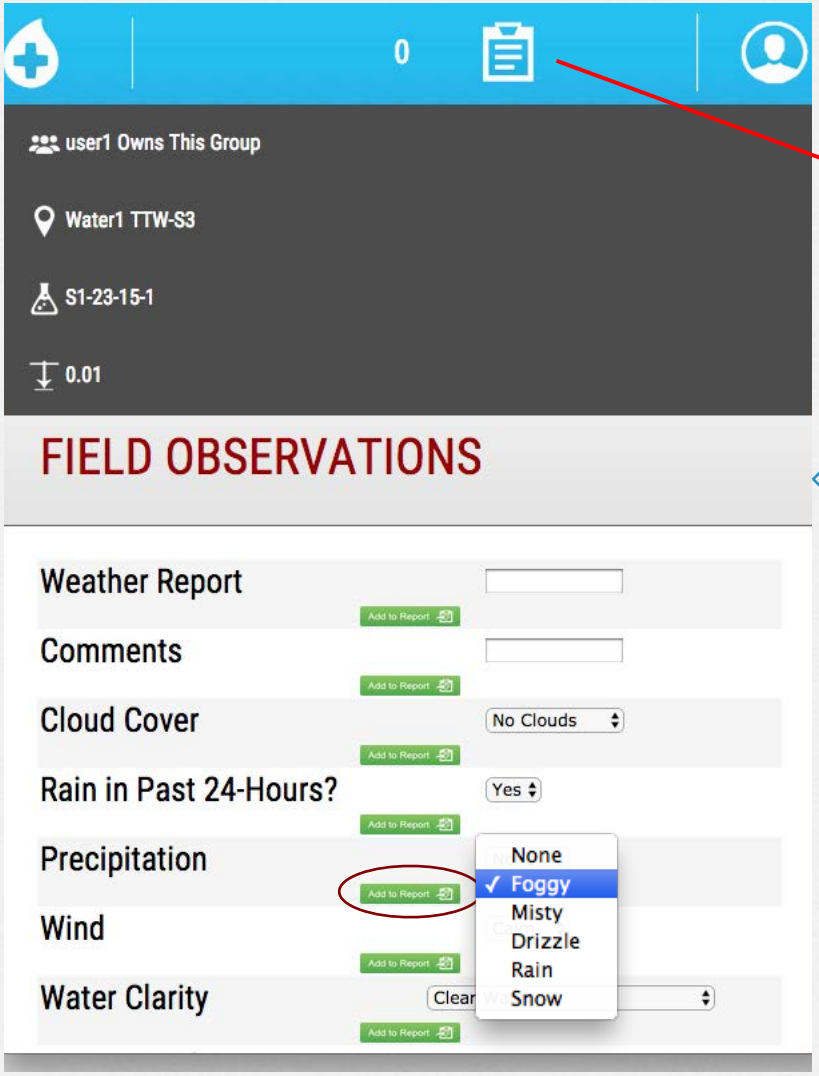
Paper Data Sheet Equivalent

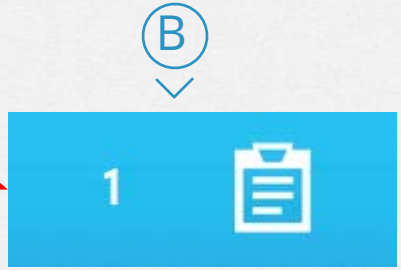


Step 2

- The values select/entered are displayed in the gray banner above the data collection input fields.
- The values displayed will be associated with every data point entered into the LabBook.

Mobile LabBook- Adding Observations





A

Step 2 cont...

Ⓐ Open “Field Observations” and enter/select data. Press the “Add to Report” button.

Ⓑ You should notice your Data Points increase by 1 at the top in the report area

Mobile LabBook- Adding Field Measurements

PHYSICAL PROPERTIES

Ⓐ

Water Width		meters
Water Depth		meters
Air Temperature		Deg C
Water Temperature	20.3	Deg C
Salinity		ppt
Turbidity		NTU

Add to Report

Ⓑ

Measurements

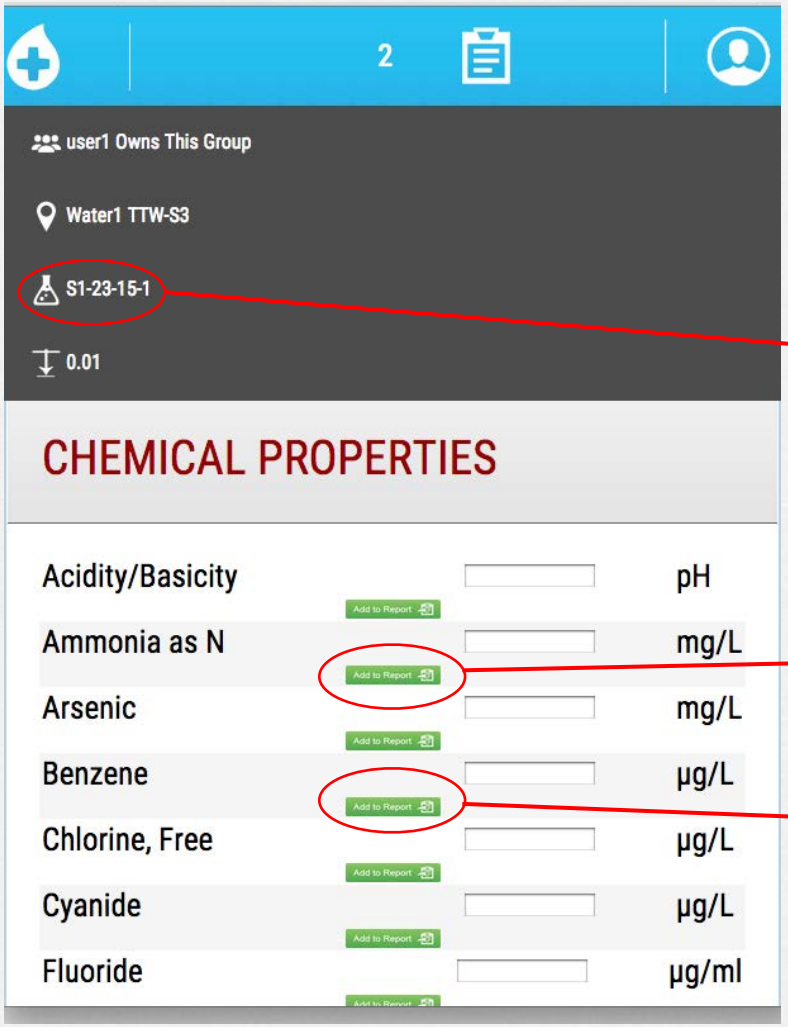
Instrument ID	Parameter	Unit	Result	Repeated Measurement Result	Bracket/ Resolution	Measurement Time	Measurement Depth*
	Total Depth (at Station) or Staff Gage readout	cm					not applicable
	Specific conductivity	uS/cm					
	Dissolved oxygen (DO)	mg/l (ppm)					
	Temperature, water	°C					
	pH	pH					
	Transparency	cm					

Paper Data Sheet Equivalent

Step 3

- Ⓐ Open “Physical Properties” and enter data. Press the “Add to Report” button.
- Ⓑ You should notice your Data Points increase by another point.

Mobile LabBook- Collecting Samples



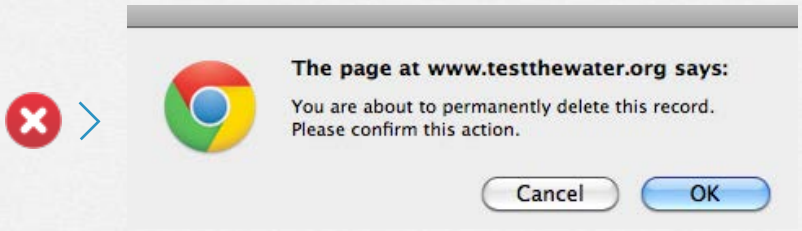
Sample ID (for offsite analyses)	Collection Time	Collection Depth	Sample Containers

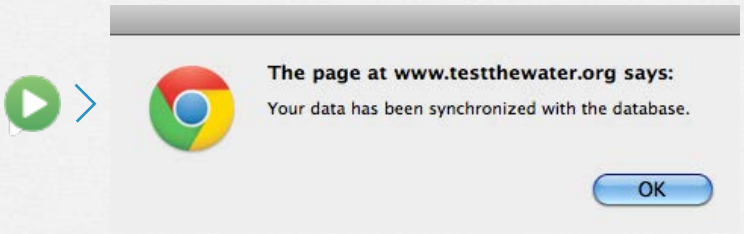
Paper Data Sheet Equivalent

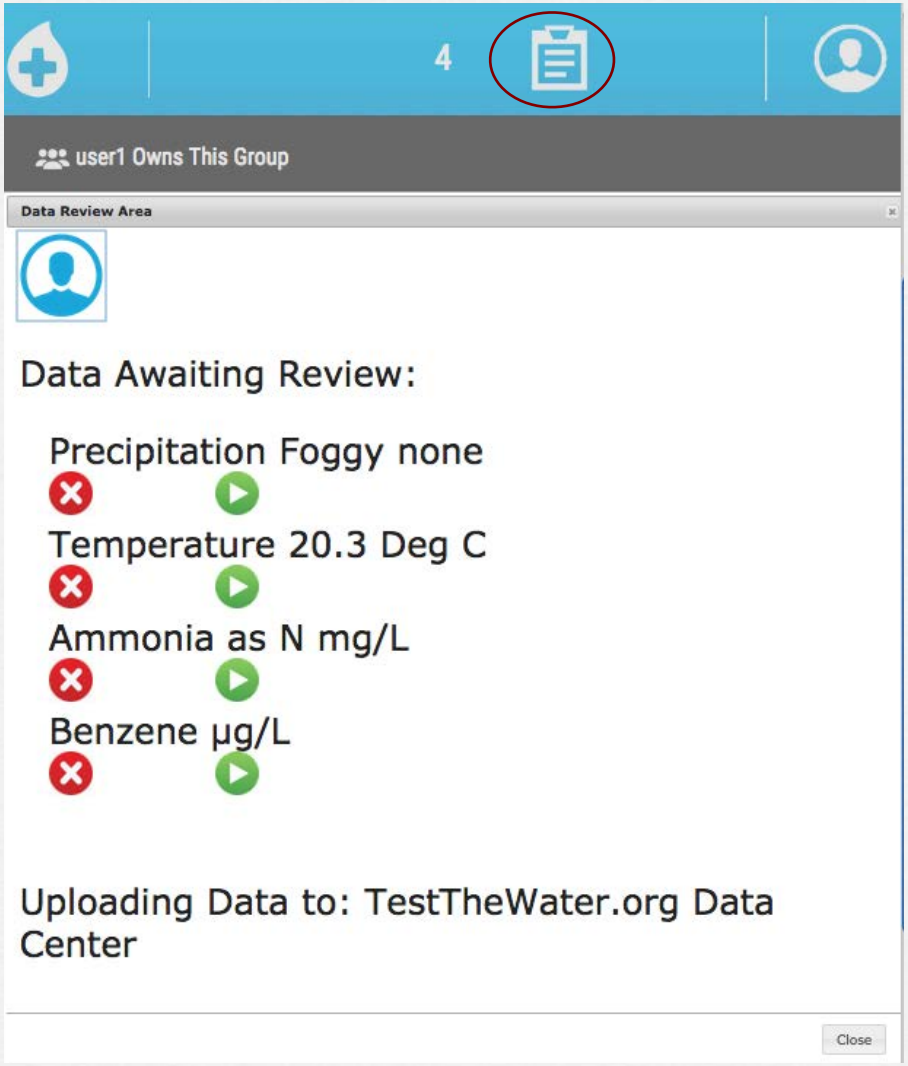
Step 4

- (A) Open “Chemical Properties” and press the “Add to Report” button without entering any results.
- (B) You should notice your Data Points increase by one point per entry.

Mobile LabBook- Data Review Area



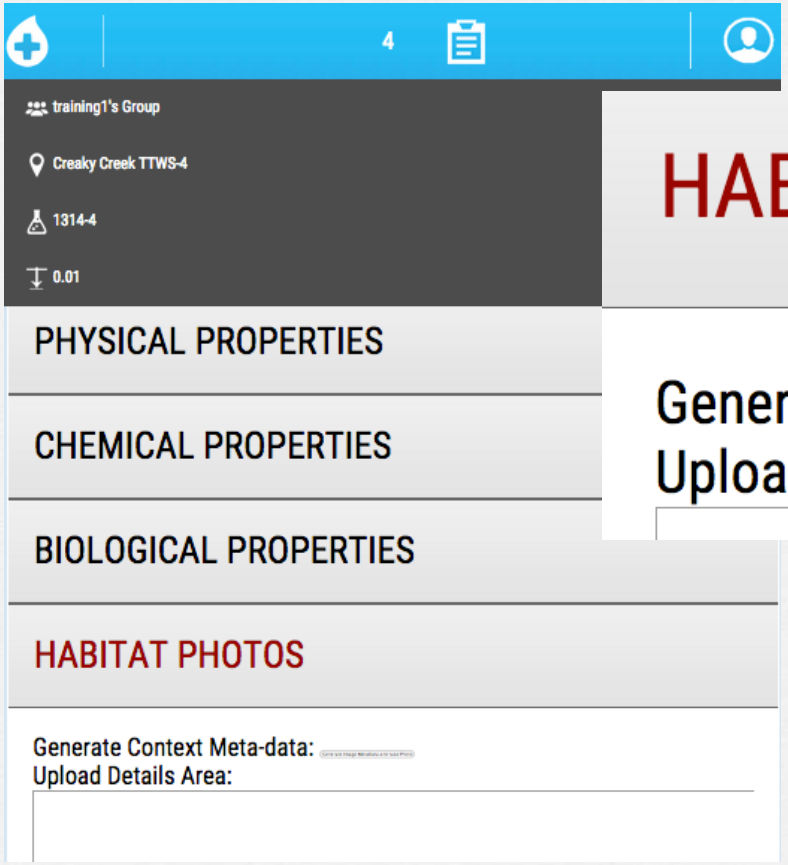


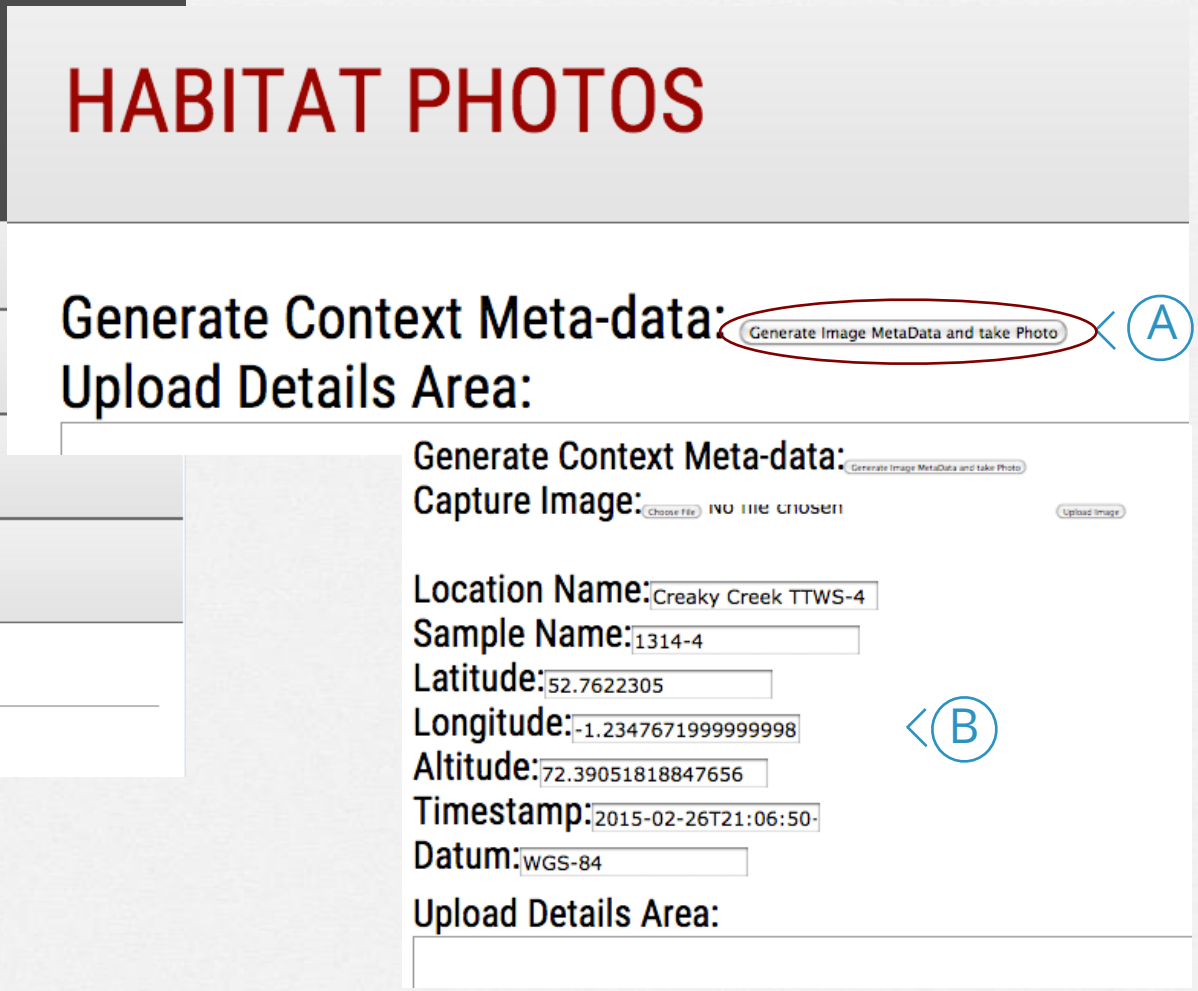


Step 5

- Go to “My Report” and review your data.
- Delete incorrect entries (red X icon).
- Upload correct data to the TTW central database (green arrow icon).

Mobile LabBook- Photo Tagging MetaData

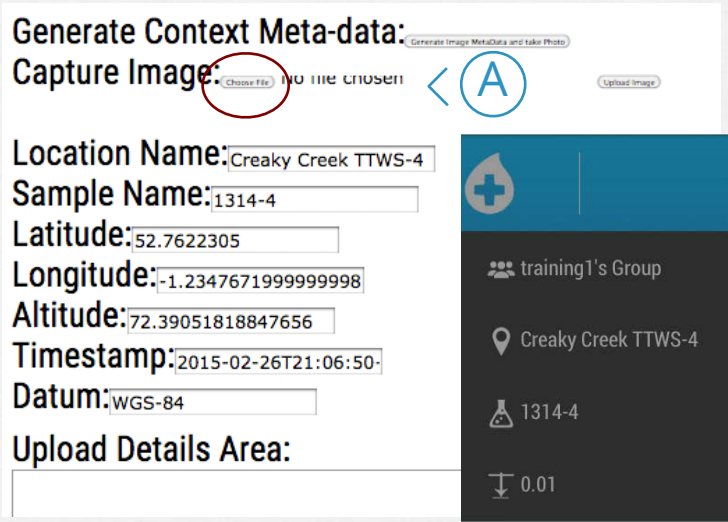


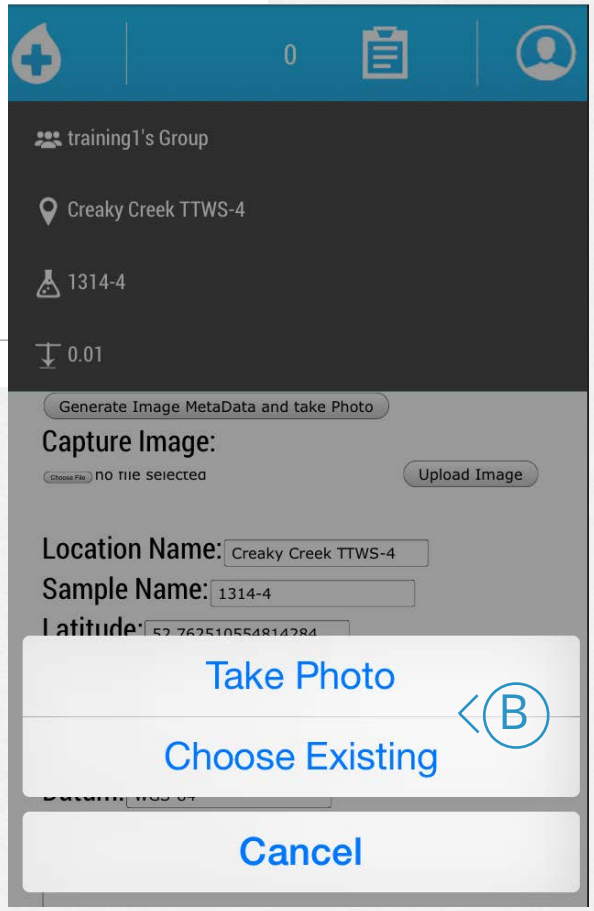


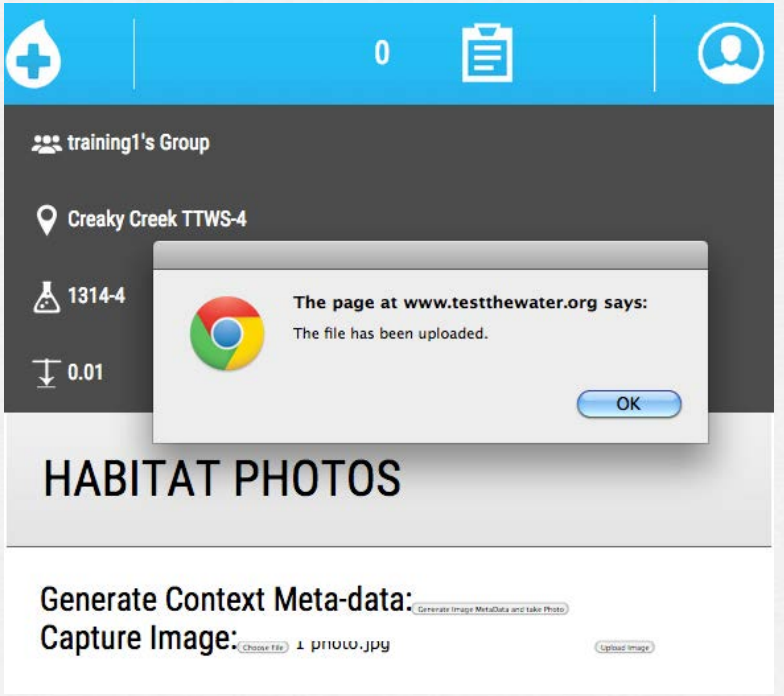
Step 6

- (A) Click on the "Generate image MetaData and Take Photo" button.
- (B) Your metadata, including current coordinates and timestamp will be populated and ready for upload with your image.

Mobile LabBook- Photo Capture and Upload



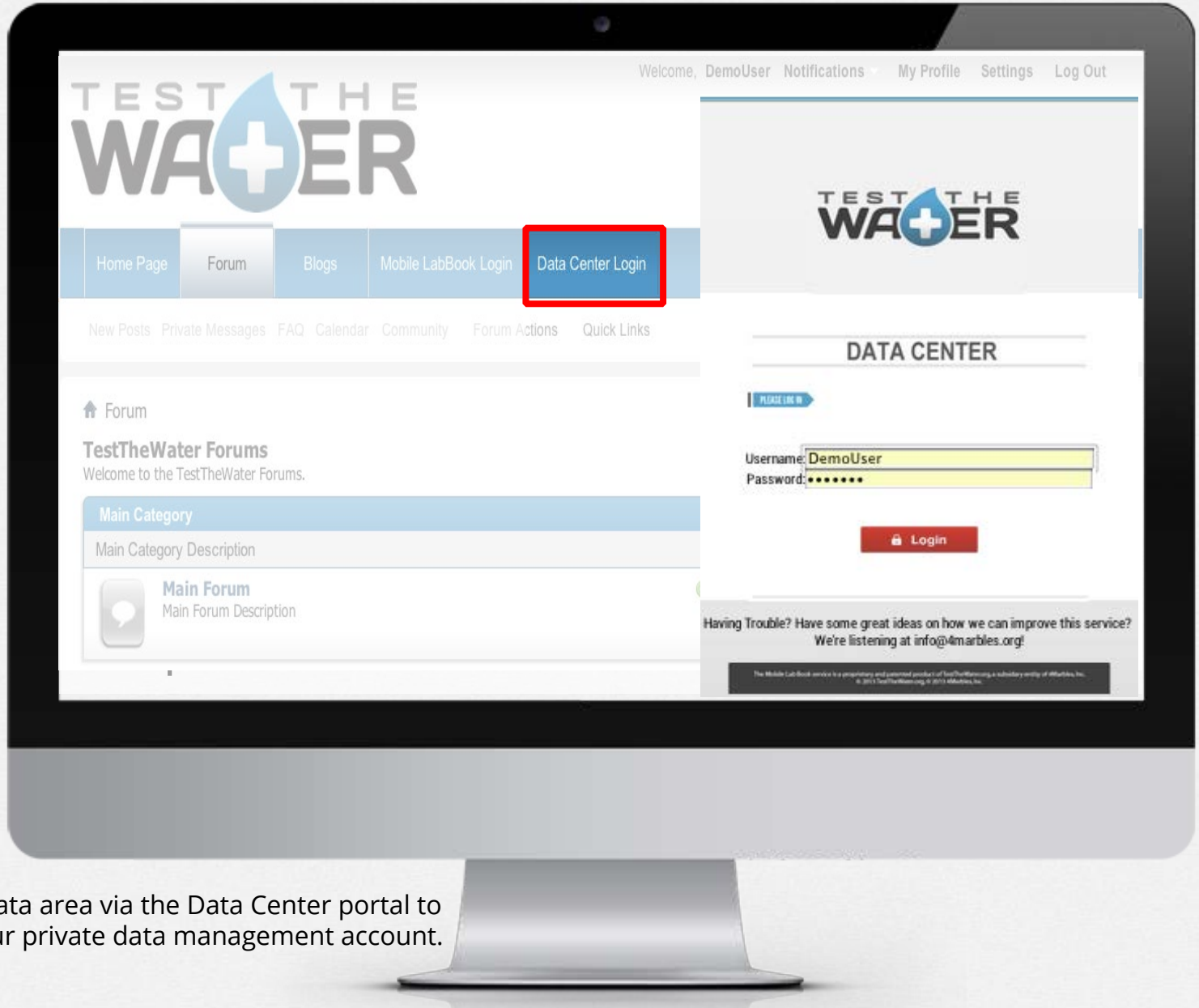




Step 6 cont...

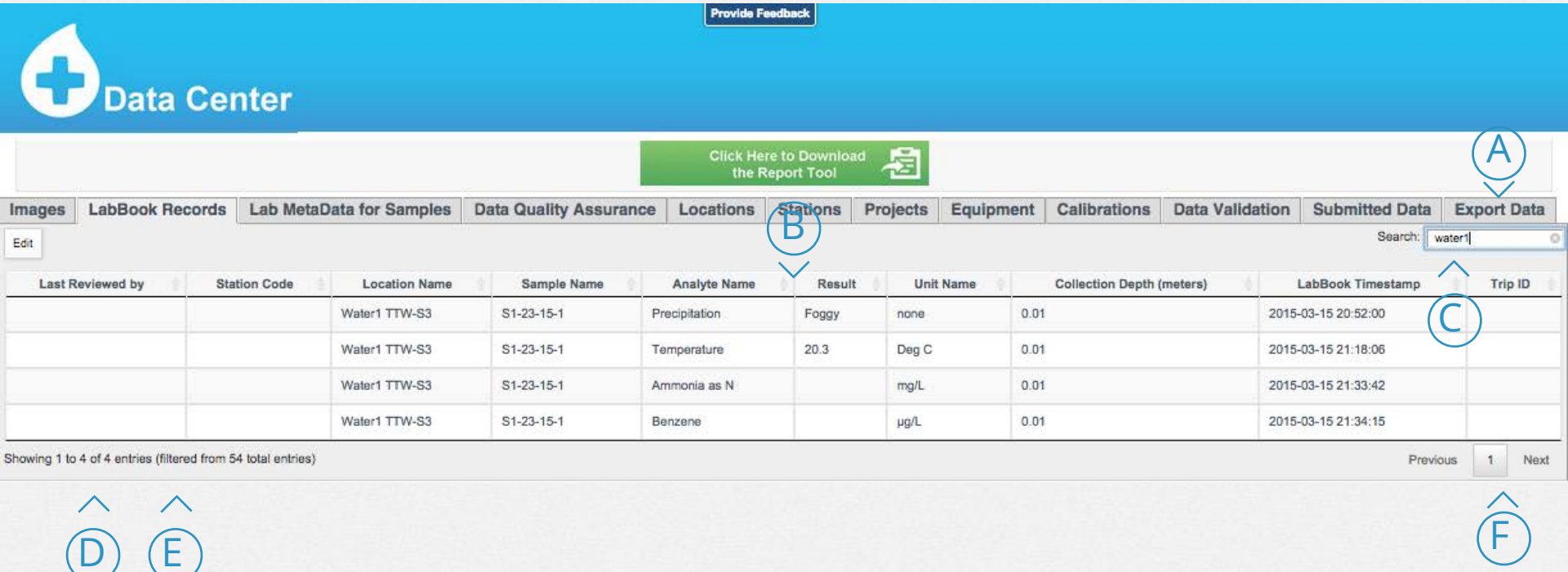
- (A) Click on the Capture Image/Choose File button.
- (B) Use your mobile device to take a new photo or use an existing photo.
- (C) Click Upload Image and the image file along with the metadata will be uploaded into the TTW DataCenter.

TTW Data Center- Access



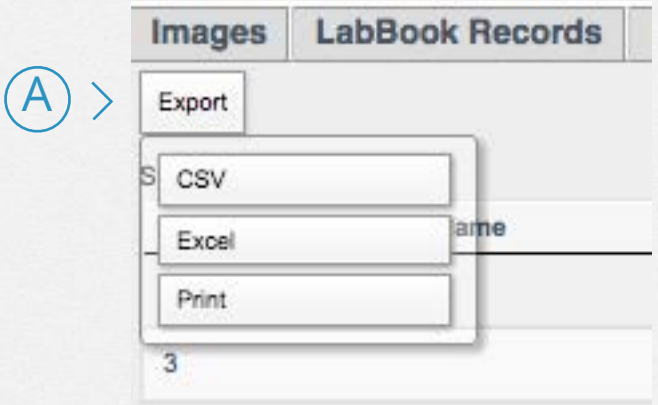
- Log into data area via the Data Center portal to access your private data management account.

Data Records Organization and Viewing



UI Functionality

- A Export (CSV, Excel, Print)
- B Sort
- C Search
- D Records / Page
- E Records Count
- F Pagination



Data Center Content Overview

Images | LabBook Records | Lab MetaData for Samples | Data Quality Assurance | **Locations** | Stations | Projects | Equipment | Calibrations | Data Validation | Submitted Data | Export Data

Edit

Show 10 entries Search:

Location Name	Sample Name	Analyte Name	Latitude	Longitude	Positional Accuracy	Altitude	Altitude Accuracy	Datum
Loc1	Sam1	Air Temperature	52.7626273683566	-1.2347858042446	65.0	72.3905181884766	10.0	WGS-84
Phone l1	Phone s1	Ammonia as N	52.7624894538268	-1.2347537594102	65.9595069389836	72.3305511474609	10.0	WGS-84
Loc1	Sam1	Fluoride	52.762568216241	-1.23470700074174	65.0	72.3174209594727	10.0	WGS-84
My Stream TTW-S5	Sample 123-4	Fluoride	52.7626393986521	-1.23479974658237	65.0	72.2917556762695	10.0	WGS-84
My Stream TTW-S5	123-5	ParticleSize	52.7626393986521	-1.23479974658237	65.0	72.2917556762695	10.0	WGS-84
My Stream TTW-S5	123-5	Coliform, Fecal	52.7625485102692	-1.23474758081592	65.0	72.2764282226563	10.0	WGS-84
My Stream TTW-S5	123-5	SpecificConductivity	52.7626280562783	-1.23478795425245	65.0	72.2746810913086	10.0	WGS-84
My Stream TTW-S5	123-5	Temperature	52.7626280562783	-1.23478795425245	65.0	72.2746810913086	10.0	WGS-84
Loc1	Sam1	Arsenic	52.7625501425884	-1.23470425676709	65.0	72.2697296142578	10.0	WGS-84
R	F	RainInPast24Hr	52.7625496617607	-1.23471961108952	65.0	72.2567977905274	10.0	WGS-84

Showing 1 to 10 of 54 entries Previous 1 2 3 4 5 6 Next

- Access to IMAGES, RECORDS, METADATA, QUALITY ASSURANCE, LOCATIONS, STATIONS, PROJECTS, EQUIPMENT & CALIBRATIONS, VALIDATION, SUBMITTED DATA, and EXPORT DATA
- GPS coordinates for each sample are collected by the Mobile LabBook and synced with the Data Center for your records.

TTW Data Center: 117 Fields from CEDEN and SWAMP

LocationName
CollectionDepth
SampleName
Result
UnitName
Accuracy (Bias)
Accuracy Unit
Precision
Precision unit
AnalyteName
Timestamp
ActualLatitude
ActualLongitude
PositionalAccuracy
Altitude
AltitudeAccuracy
Datum
SampleTypeCode
LabBatch
AnalysisDate
LabReplicate
MDL
RL
DilutionFactor
PrepPreservationName
PrepPreservationDate
DigestExtractMethod
DigestExtractDate
LabAgencyCode
LabSubmissionCode

BatchVerificationCode
FieldReplicate
ResQualCode
QACode
ProtocolCode
AgencyCode
CollectionDeviceName
ComplianceCode
ExpectedValue
CalibrationDate
ProjectCode
CollectionMethodCode
Replicate
MatrixName
FractionName
VariableResult
SampleDate
CollectionTime
UnitCollectionDepth
MethodName
SWRCBWatTypeCode
CalWater_2004_RB
StationName
StationSource
StationCode
CoordinateNumber
TargetLatitude
TargetLongitude
LocalWatershed
LocalWaterbody

State
Counties_2004_COUNTY
LocationCode
Station Location Description
Driving directions
Access to Station
Landmarks
Instrument ID
CharacteristicParameter
Units
CalibrationCheck DateTime
Associated Event
Temperature (C) at Calibration
Thermometer ID
Standard Material
Valueof Standard
First Reading
SecondReading
ThirdReading
ActionTaken
Reading after calibration
Cal/AccurCheck Operator
Stock Dilutions Preparer
Ensuing Lab Batch ID
Barometric Pressure at Calibration (mmHg)
CALAC Comments
Accuracy Check Differential or Drift
Percent Accuracy (Bias)

Accuracy Derivation Rationale
Param&Method Code
Domain Code
Agency/Program Inventory #
Serial #
Common Name
Parameter
Type /Method
Features
Model
Calibration Mode
Range and Units
Detection Limit
Resolution (Increments)
Manufacturer (Make)
Vendor
Catalog Number (Vendor)
Catalog Number (Manufacturer)
Lot/Batch #
Date Purchased
Date of First Use
Expiration Date
Parts/Reagents Replaced
Replacement Date
Buyer Owner
Custodian or Operater
Batteries
Comments
Manufacturer's Specifications

http://www.ceden.org/docs/2013_documentation/CEDENFieldIMPlan_2013_0823.pdf
http://www.ceden.org/docs/2013_documentation/CEDENChemIMPlan_2013_0823.pdf
http://www.waterboards.ca.gov/water_issues/programs/swamp/tools.shtml#qapp_tools

Data Center - Photo Management

Provide Feedback

Data Center

Click Here to Download the Report Tool

Images | LabBook Records | Lab MetaData for Samples | Data Quality Assurance | Locations | Stations | Projects | Data Validation Area | Submitted Data | Export Data

Show 10 entries Search:

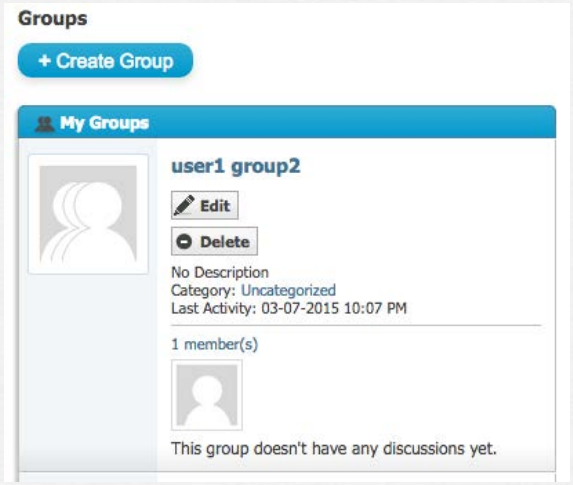
Photo	Location Name	Sample Name	Timestamp	Latitude	Longitude	Positional Accuracy	Altitude	Altitude Accuracy
	My Stream TTW-S5	Sample 123-4	2015-02-15 08:43:12					
	My Stream TTW-S5	Sample 123-4	2015-02-15 08:45:42	52.76251718628355	-1.234742777784496	65	72.4290771484375	10
	Creek1 TTW-S5	123-6	2015-02-15 09:29:14	52.76264596526641	-1.2347883409232325	65	72.23751831054688	10
	TTW-123	Creek abc	2015-02-18 14:35:19	41.75981443844899	-72.72784866399385	10	40.0206184387207	4

Showing 1 to 4 of 4 entries Previous

- This will display all your pictures taken in the field and the associated metadata
- Displays Photos you took and any photos submitted to your Group if you have one.
- Click on Thumbnail of photo to open the full image in new Tab, or...
- Right click any photo to download and save to your local drive

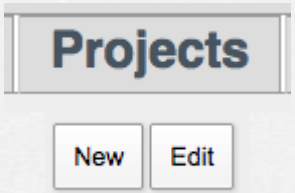
TTW Data Center- User Roles & Administration

Group Owner

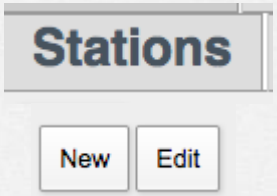


Public, Moderated or Invitation Only

Project Manager



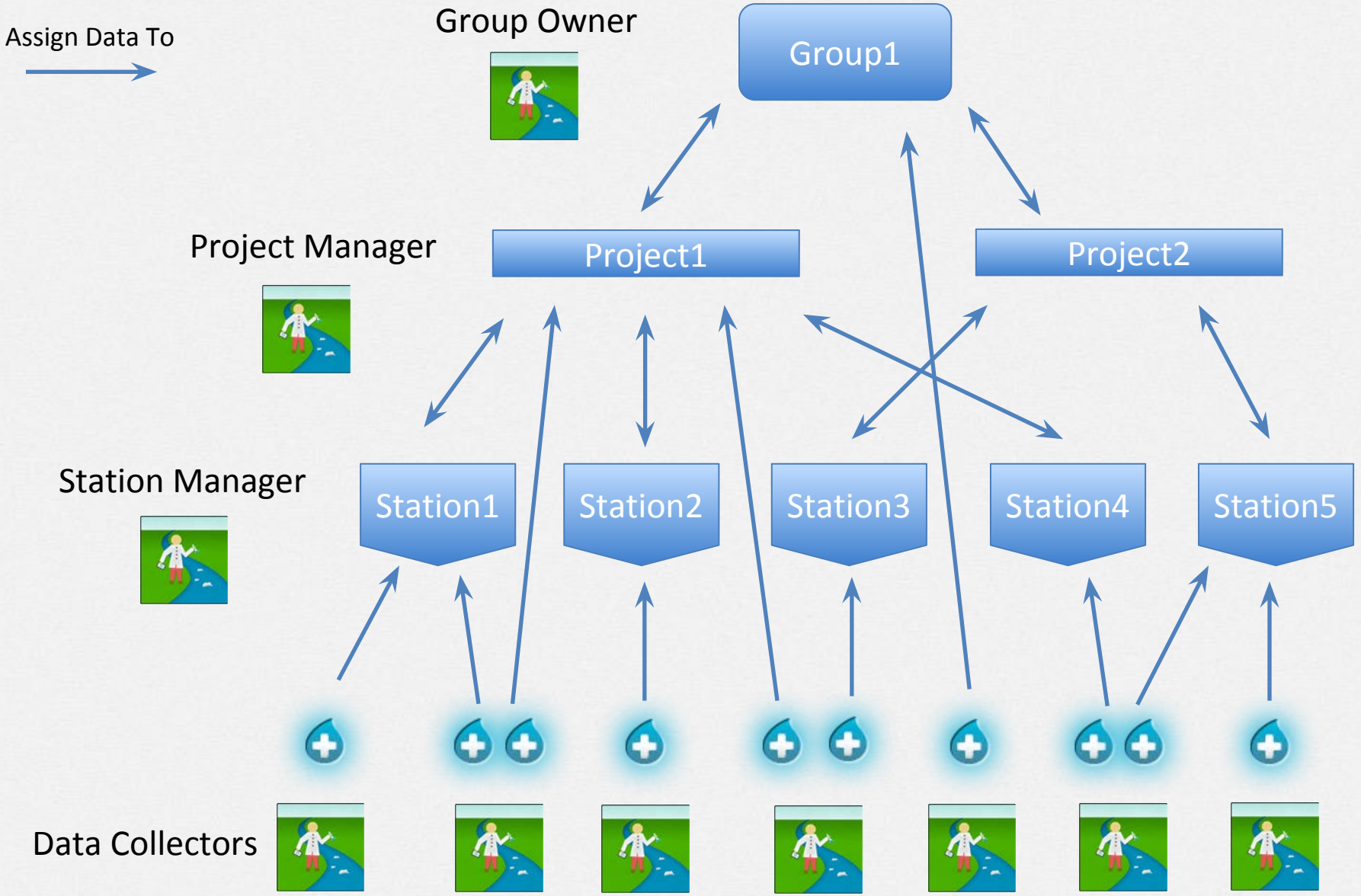
Station Manager



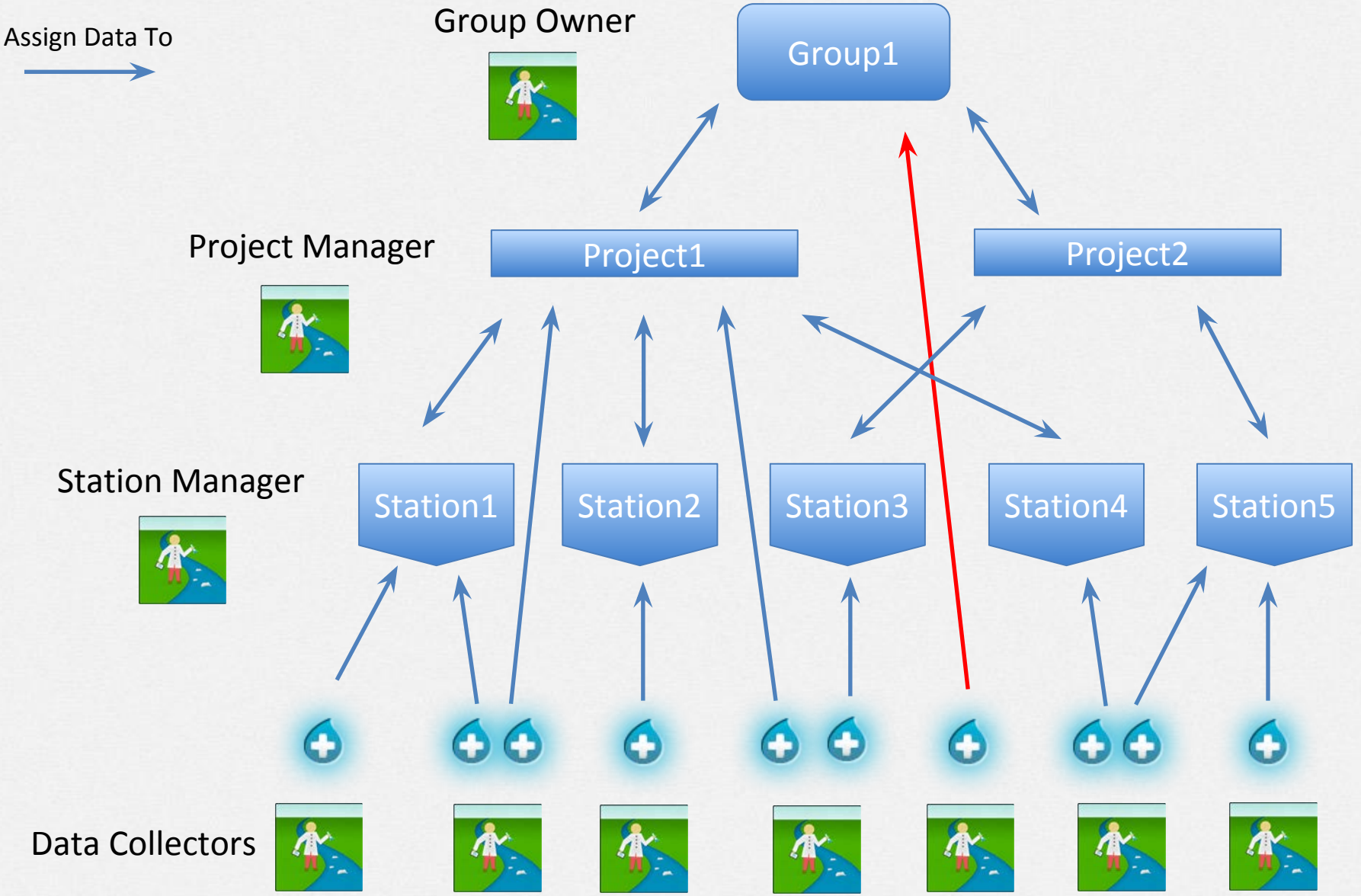
Data Collector

The Data Collector, Group Owner, Station Manager and Project Manager roles are available for Data Management. While these distinct roles exist, all four roles could be played by a single individual in relation to any given data. This depends on how you've chosen to structure your organization.

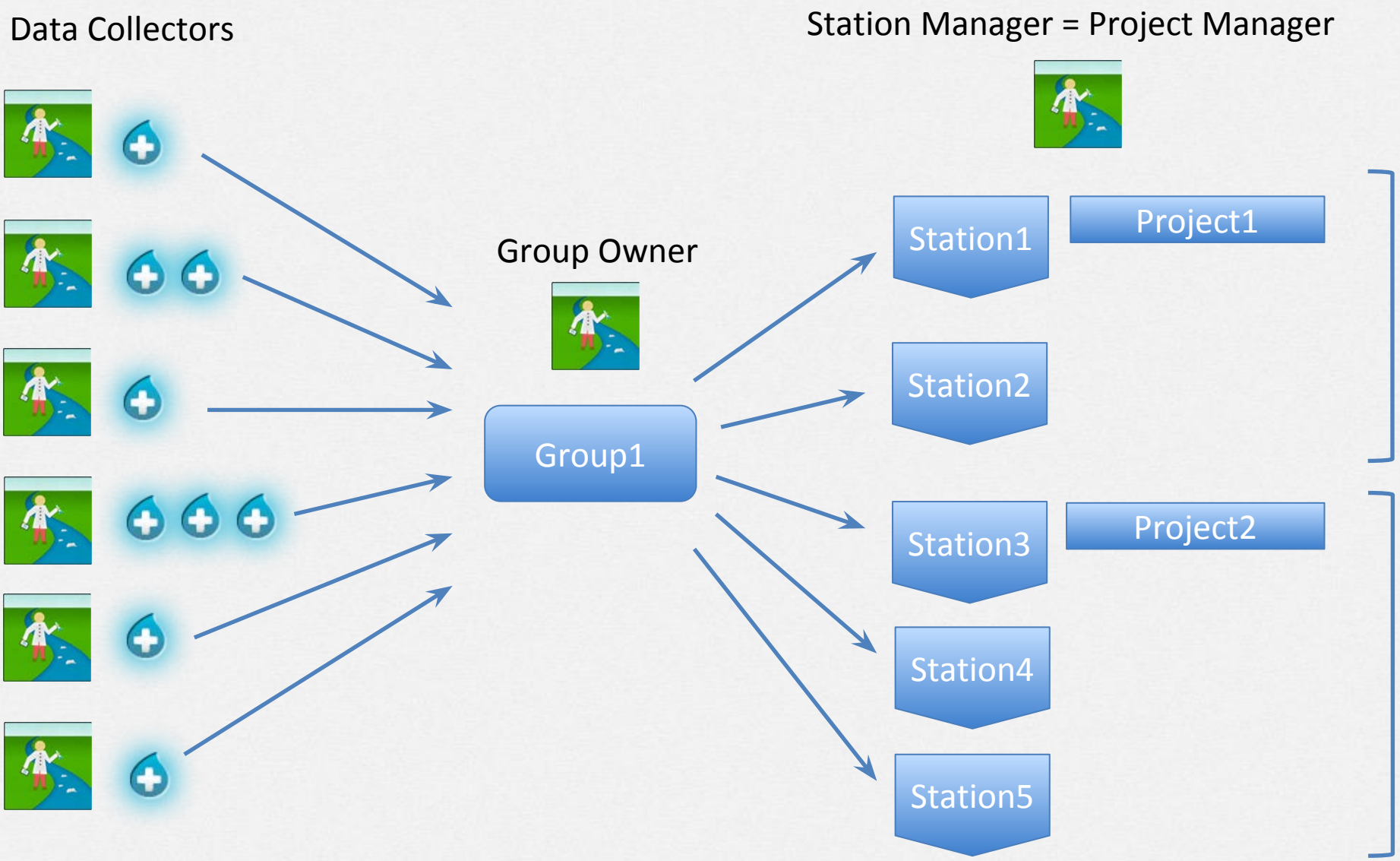
TTW Data Center- Potential Data Flows



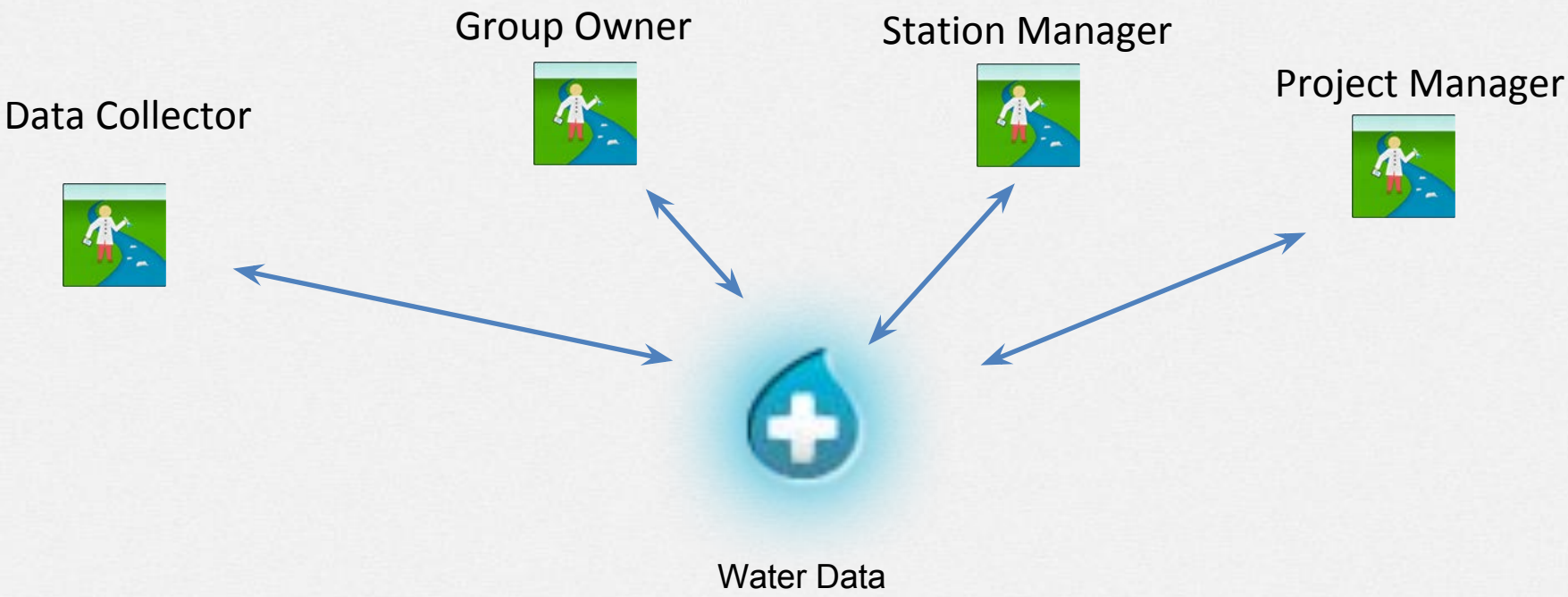
TTW Data Center- An Example Data Flow



Data Admin: Assigning Data for Review

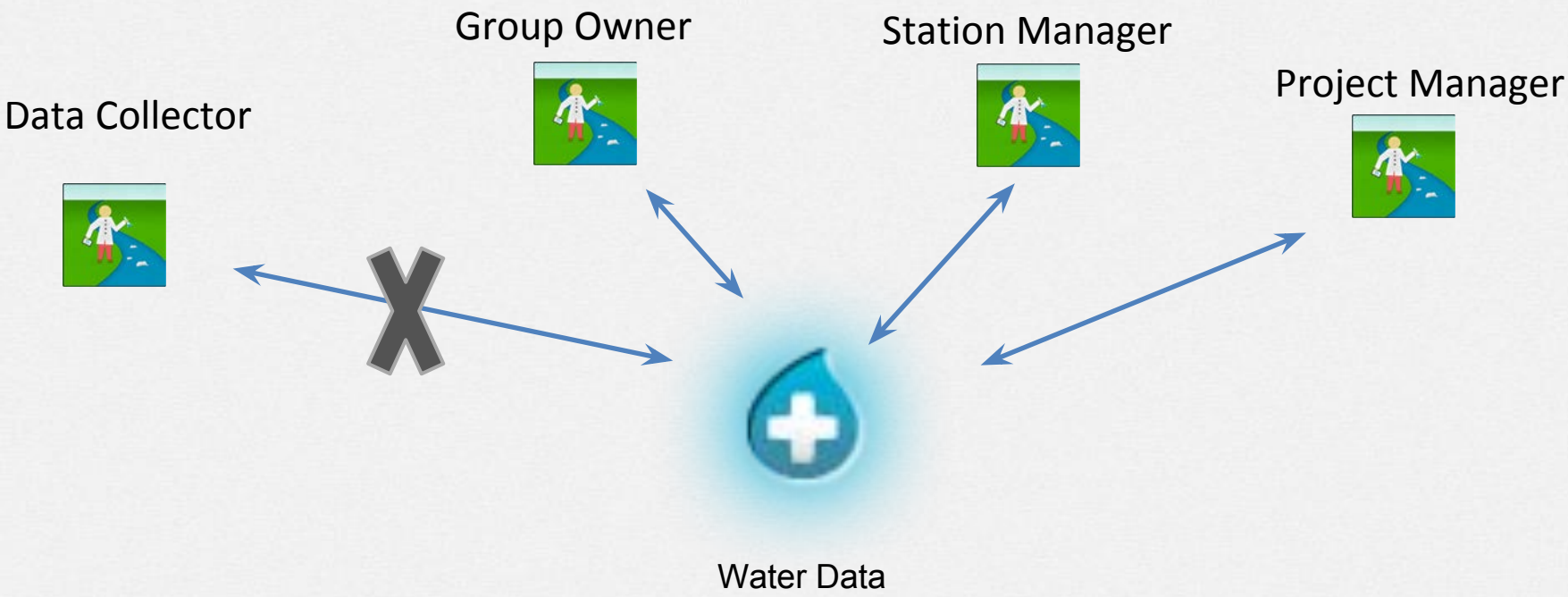


Data Editing and Validation



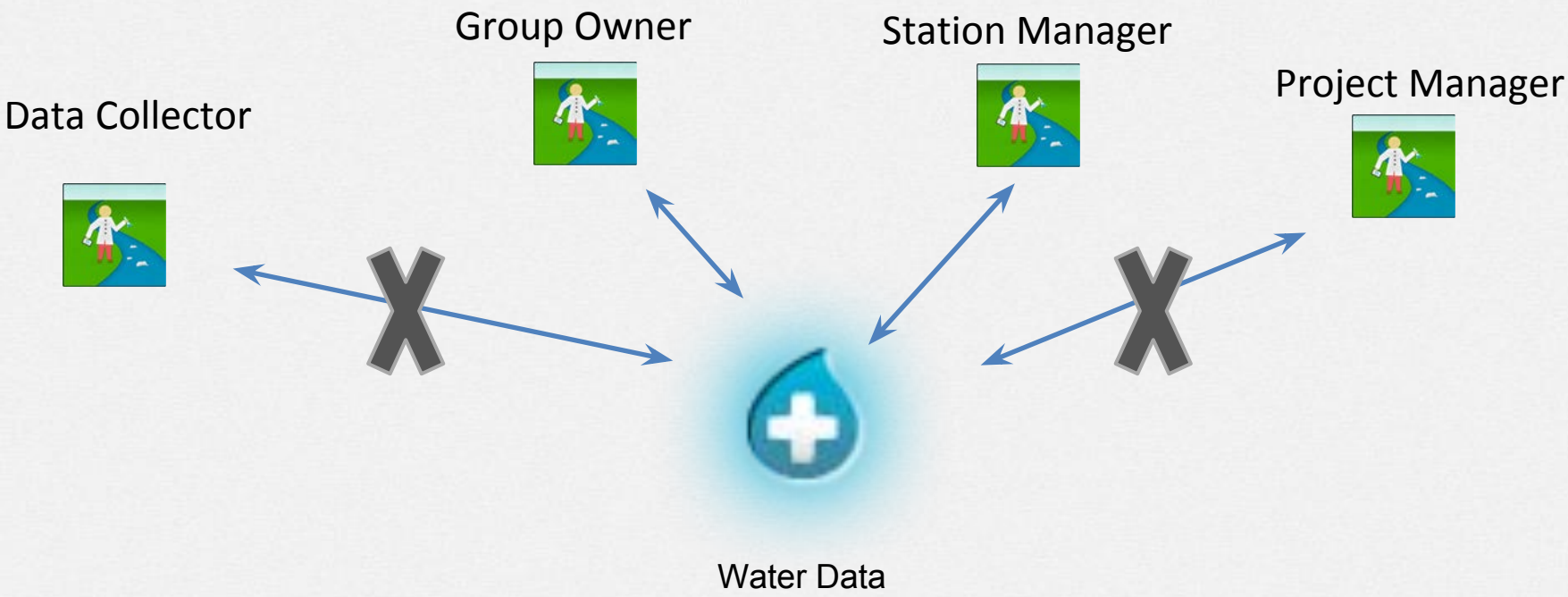
Your organization can have all roles participate in data editing and validation...or

Data Editing and Validation



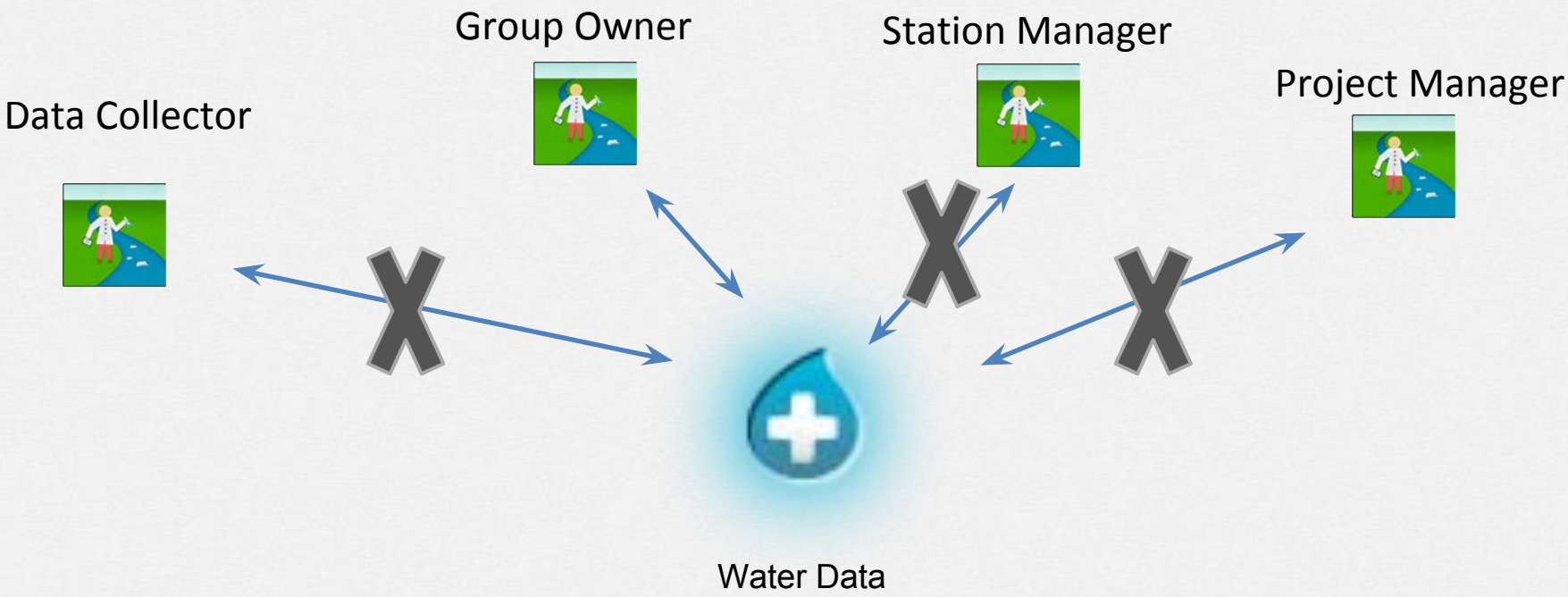
You can limit who can access and edit the Data after submitted.

Data Editing and Validation



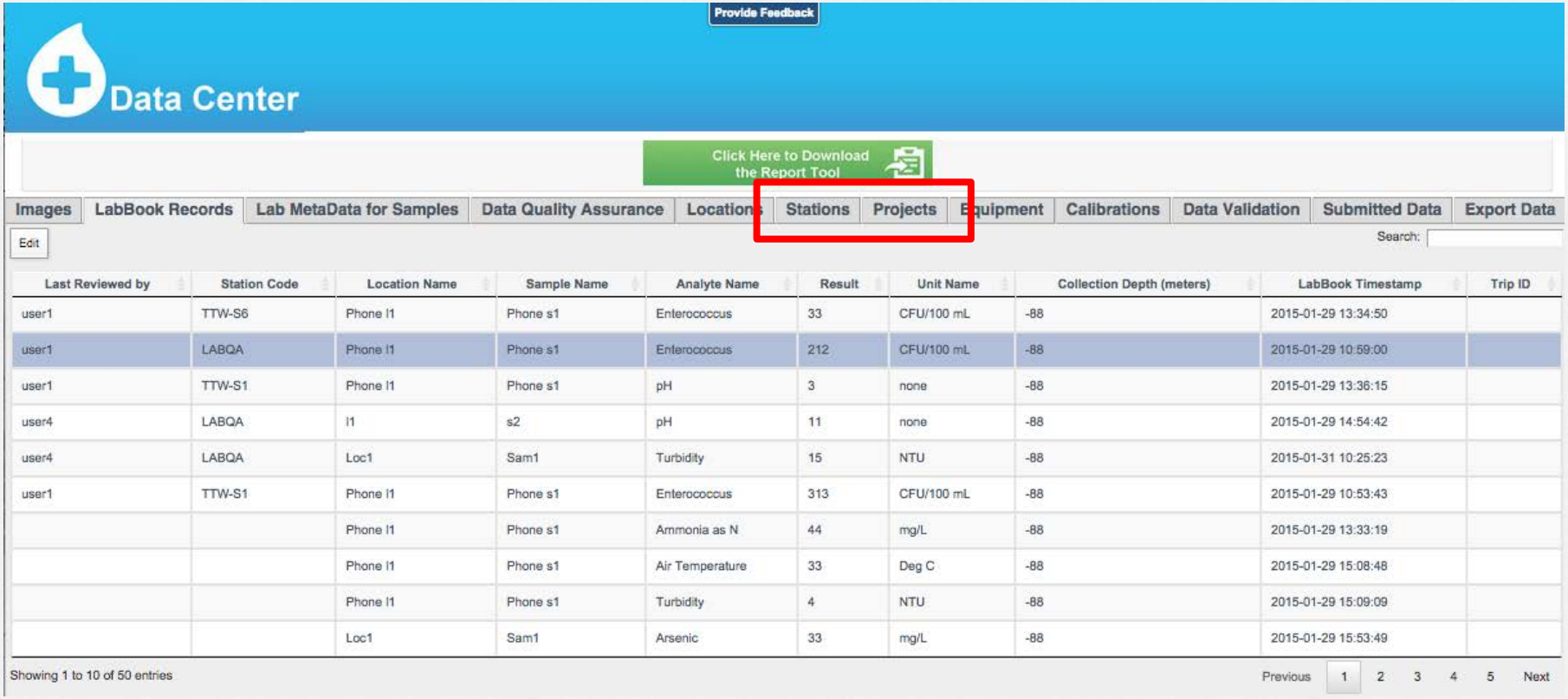
You can limit who can access and edit the Data after submitted.

Data Editing and Validation



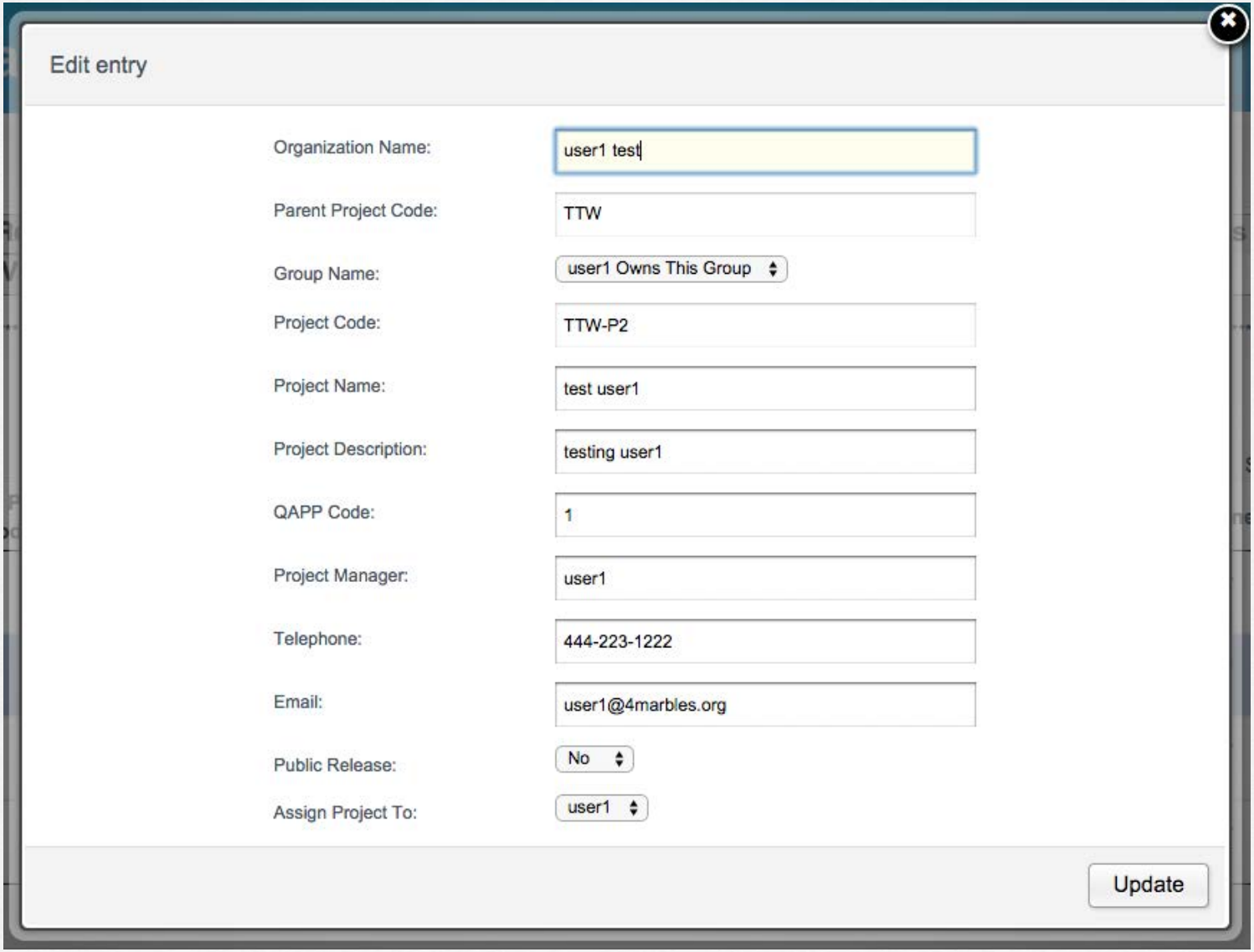
You can limit it to just the Admin Group Owner.

Data Center- Stations & Projects



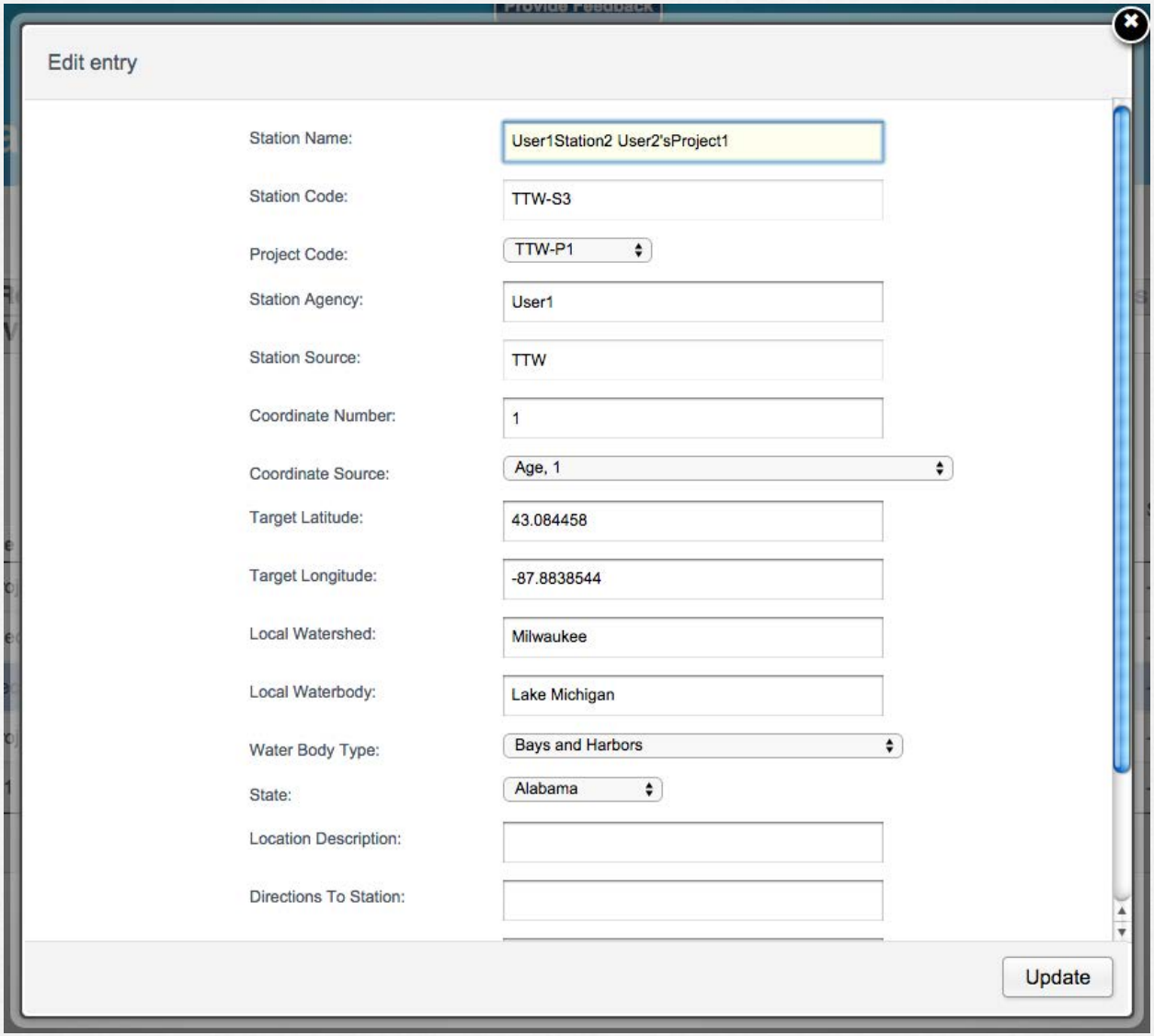
- STATIONS and PROJECTS tabs provide access to create new or edit existing projects or stations owned by you or in a group you own.

Data Center- Managing Projects



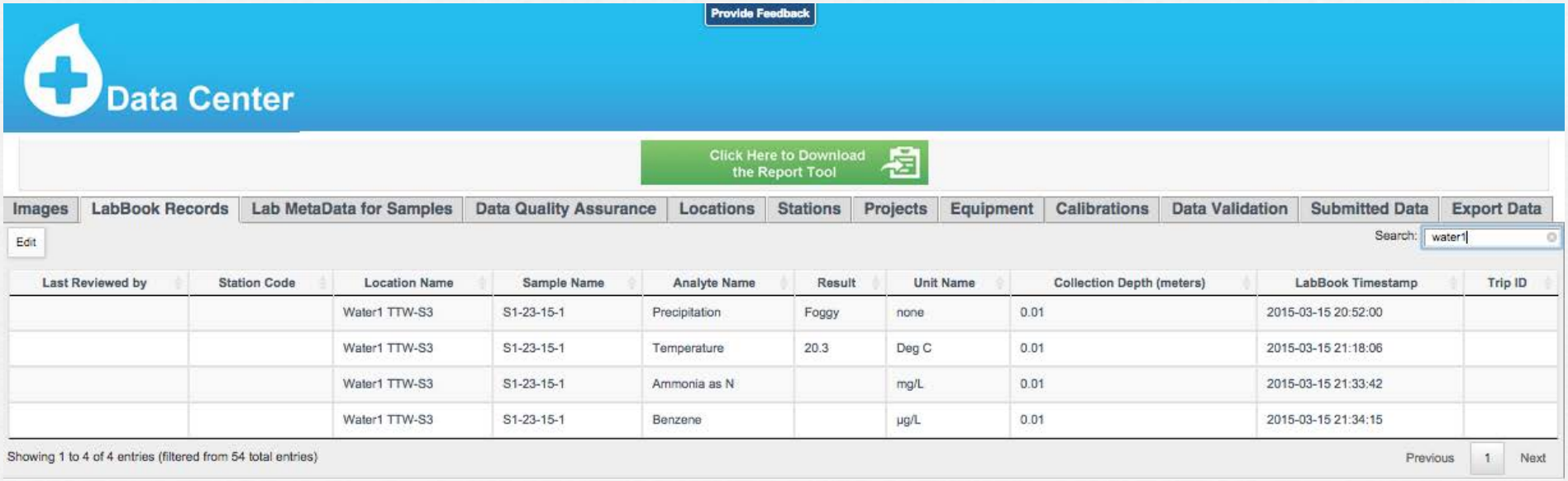
- CEDEN validation rules are enforced for both Station and Project creation and editing.

Data Center- Managing Stations



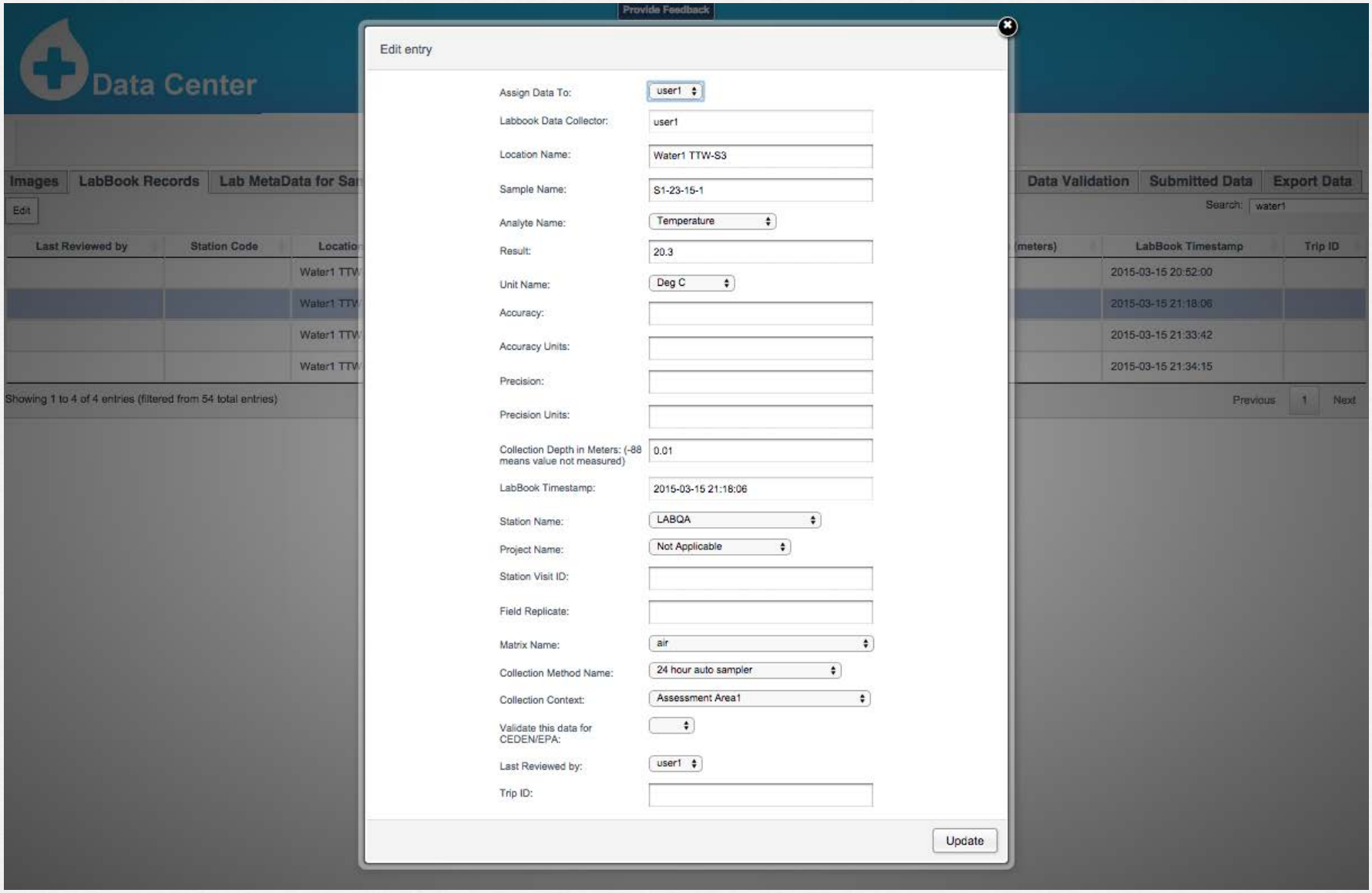
- CEDEN validation rules are enforced for both Station and Project creation and editing.

Data Center- Managing Data Records



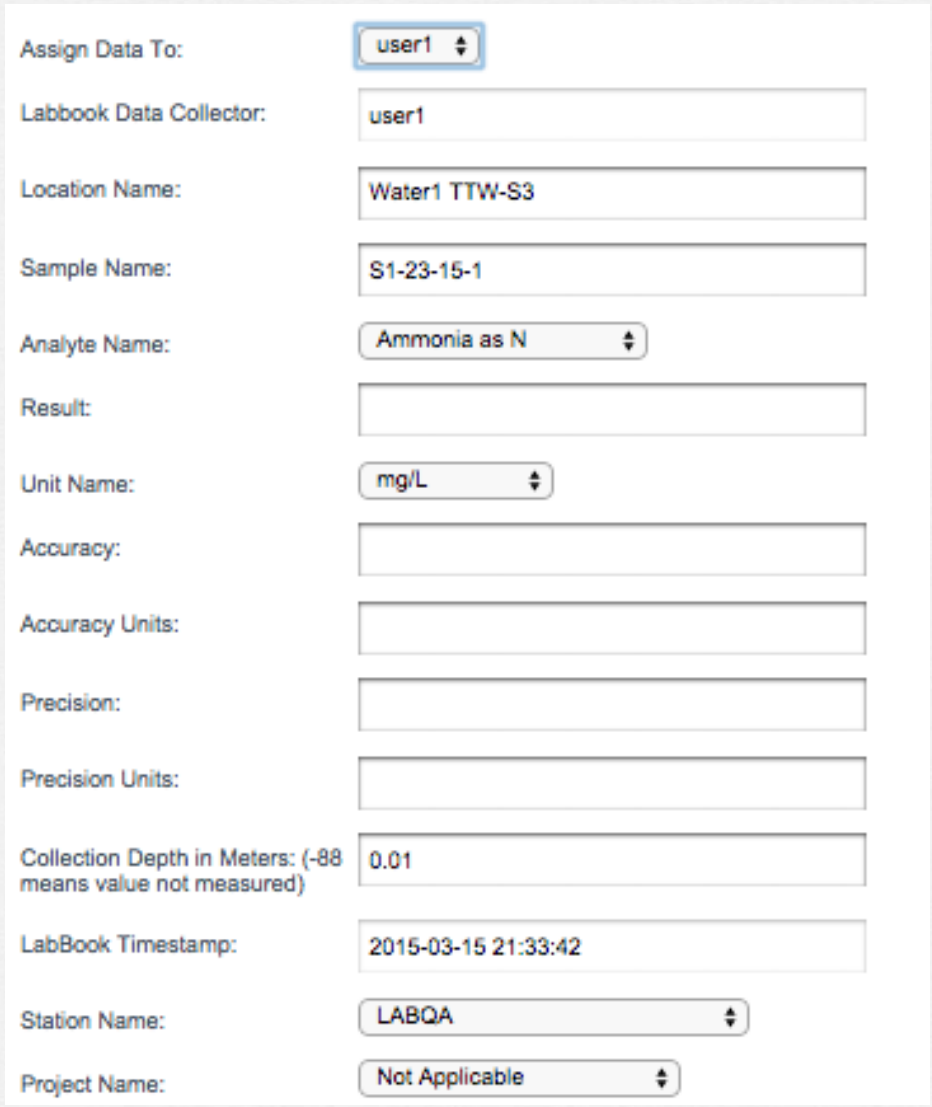
- Manage your data with access to IMAGES, RECORDS, METADATA, QUALITY ASSURANCE, LOCATIONS, STATIONS, PROJECTS, EQUIPMENT & CALIBRATIONS, VALIDATION, SUBMITTED DATA, and EXPORT DATA

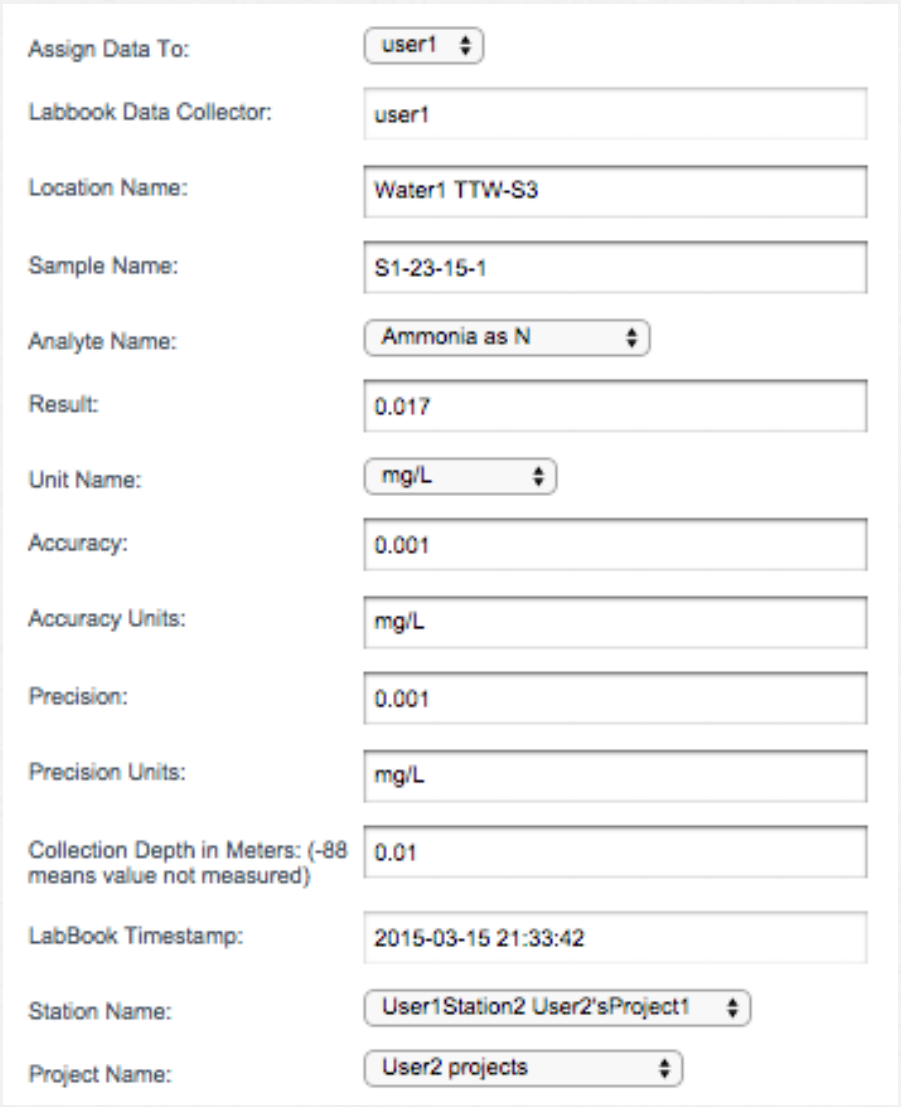
Data Center- Editing Fields



- Edit with drop-down selection of CEDEN Standard Vocab and Form Validation.

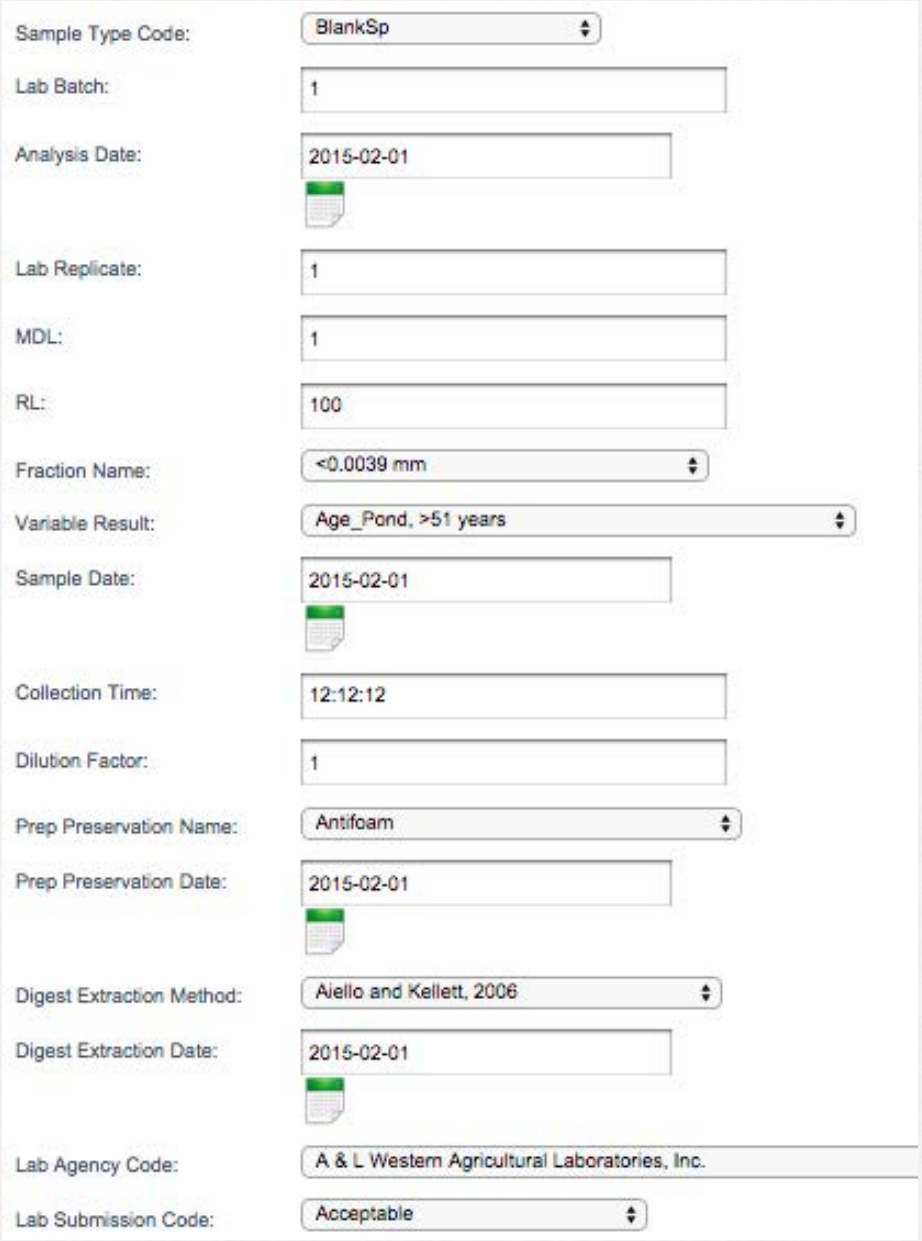
Data Center- Editing Sample Results



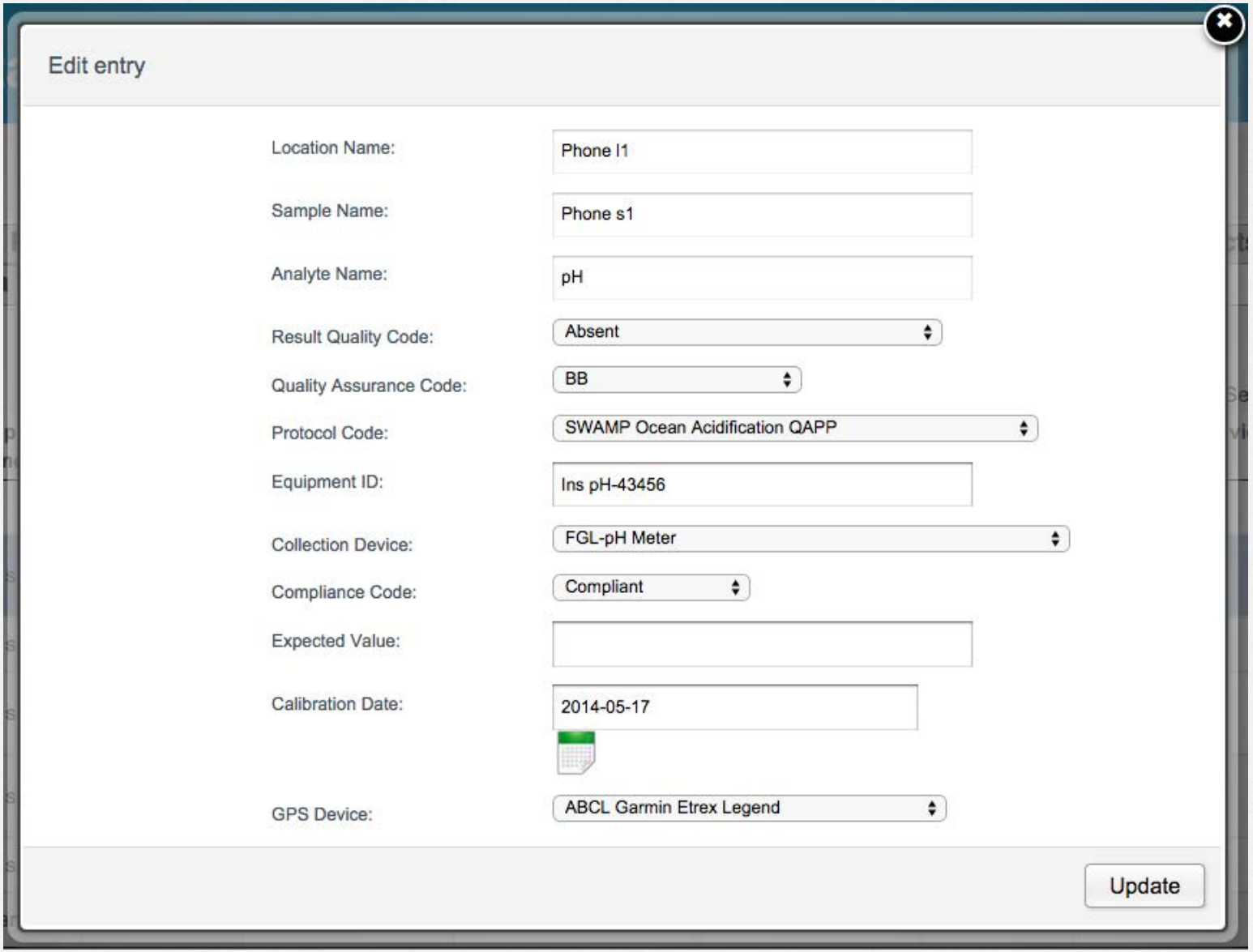


- Edit with drop-down selection of CEDEN Standard Vocab and Form Validation.

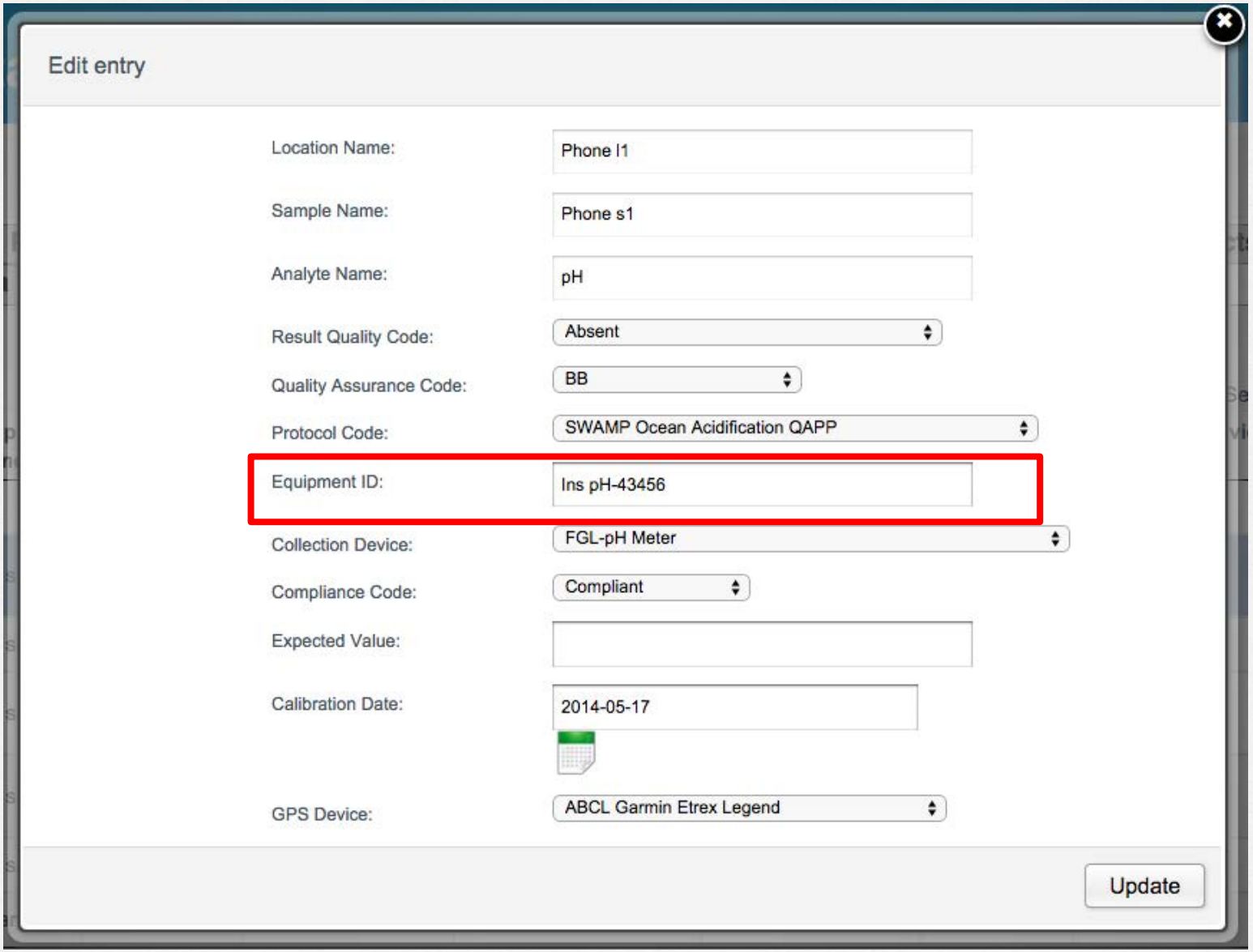
Data Editing- Lab MetaData for Samples



Data Editing – Data Quality Assurance (QA)



Data Editing – Data Quality Assurance (QA)



Data Editing – QA Equipment & Calibrations

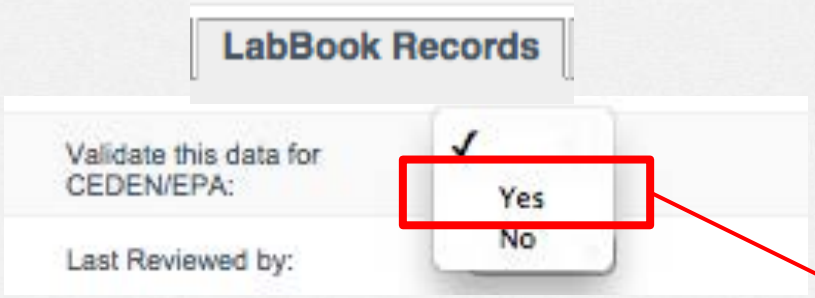
Equipment

Equipment ID:	Ins pH-43456
Parameter Method Code:	PH
Domain Code:	2
Inventory Number:	123456
Serial Number:	111-1111-11111
Common Name:	pH meter
Parameter:	pH
Type Method:	field
Features:	probe
Calibration Mode:	9
Range Units:	log[H]
Detection Limits:	0-14
Resolution:	0.01
Manufacturer:	Fischer
Vendor:	Fischer

Calibrations

Equipment ID:	Ins pH-43456
Characteristic Parameter:	pH
Instrument Units:	log[H]
Calibration Datetime:	2014-05-17 01:05:58
Associated Event:	Trip ID 5
Temp. During Calibration:	25
Thermometer ID:	78911
Standard Material:	liquid
Standard's Theoretical Value:	7.0
First Reading:	6.9
Second Reading:	7.0
Third Reading:	7.0
Action Taken:	calibrated
Reading After Calibration:	7.0
Stock Dilutions Preparer:	Jack Pickelson

Data Validation for Submission to CEDEN



CEDEN
CALIFORNIA ENVIRONMENTAL DATA EXCHANGE NETWORK

Images | LabBook Records | Lab MetaData for Samples | Data Quality Assurance | Locations | Stations | Projects | Equipment | Calibrations | Data Validation | Submitted Data | Export Data

Edit

Search:

Location Name	Sample Name	Analyte Name	Result	Unit Name	Data is Validated
Next River #1	S1-387	Enterococcus	33	CFU/100 mL	
Whitewater S13	S13-11	Enterococcus	212	CFU/100 mL	Yes
Whitewater S14	S14-32	Benzene	32	µg/L	
Whitewater S15	S15-23	Air Temperature	37	Deg C	

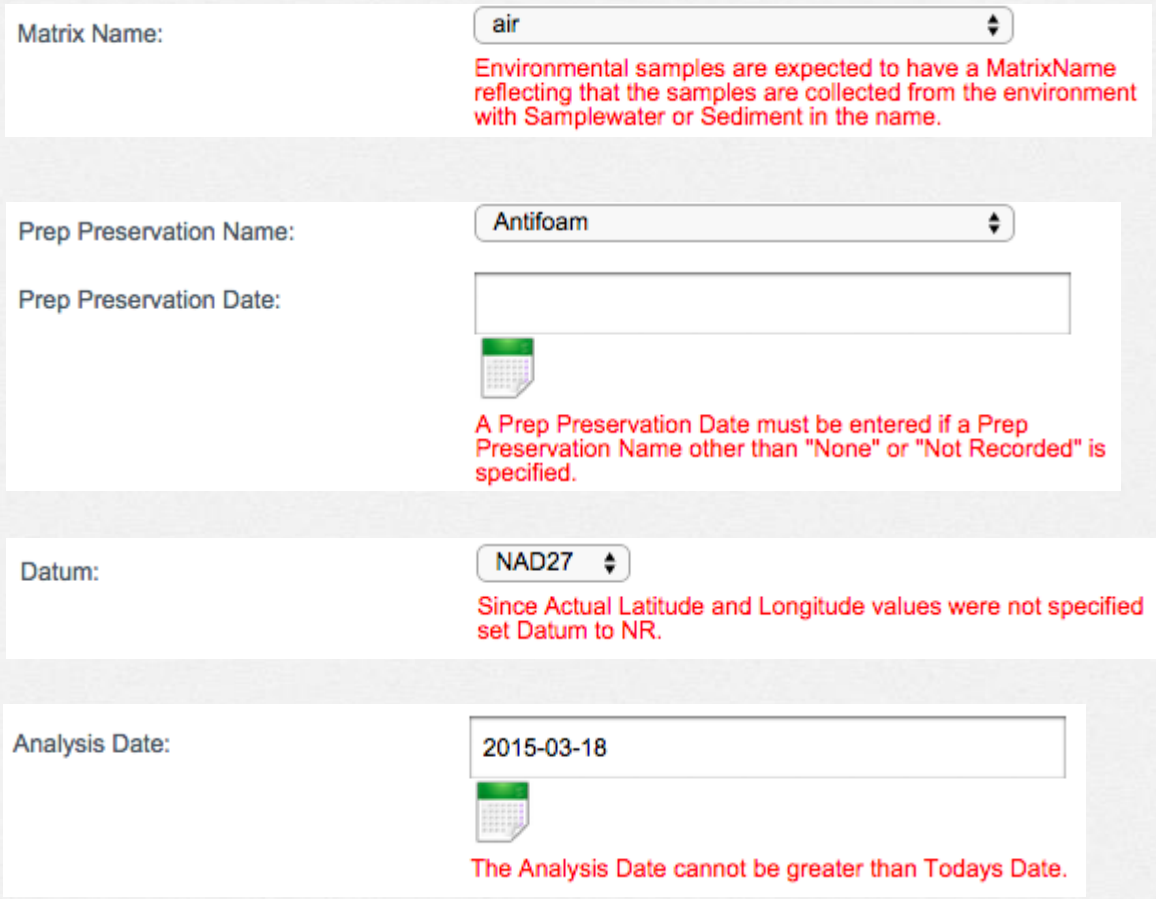
Showing 1 to 4 of 4 entries

Previous 1 Next

- User adds data to “Data Validation Area”, then…

TTW Enforces the Necessary Rules

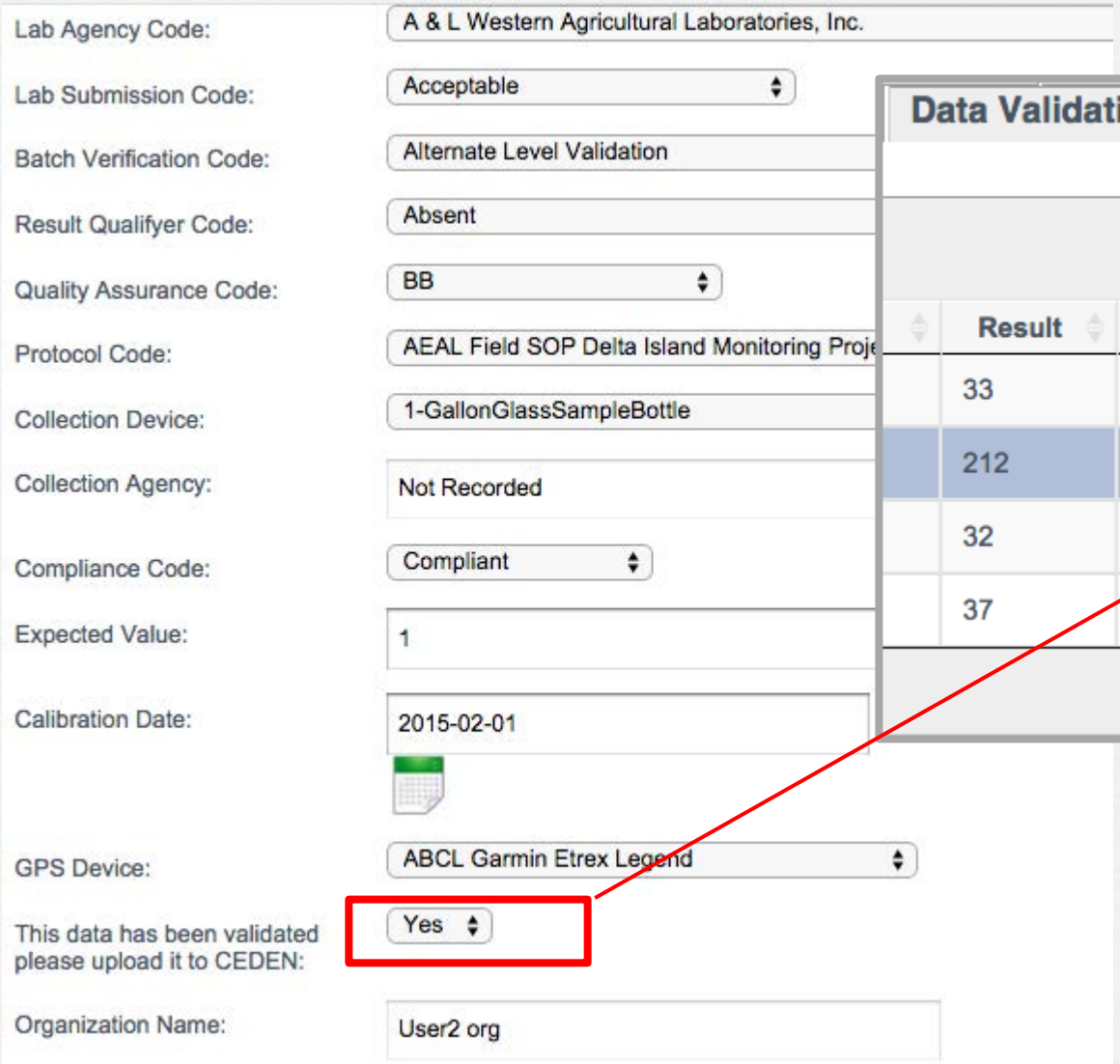
A few examples of rule violations which the 'Validation Area' enforces prior to allowing user to mark a data record as validated for submission to CEDEN:

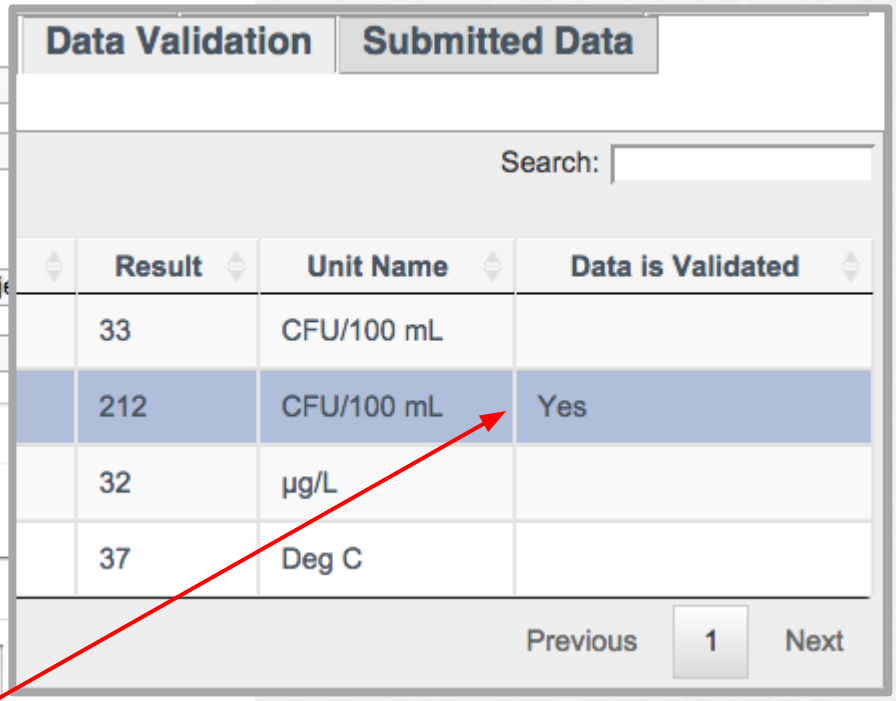


TTW platform enforces over 110 rules for each data record!

CEDEN validation rules are applied to applicable fields prior to allowing user to mark data as validated.

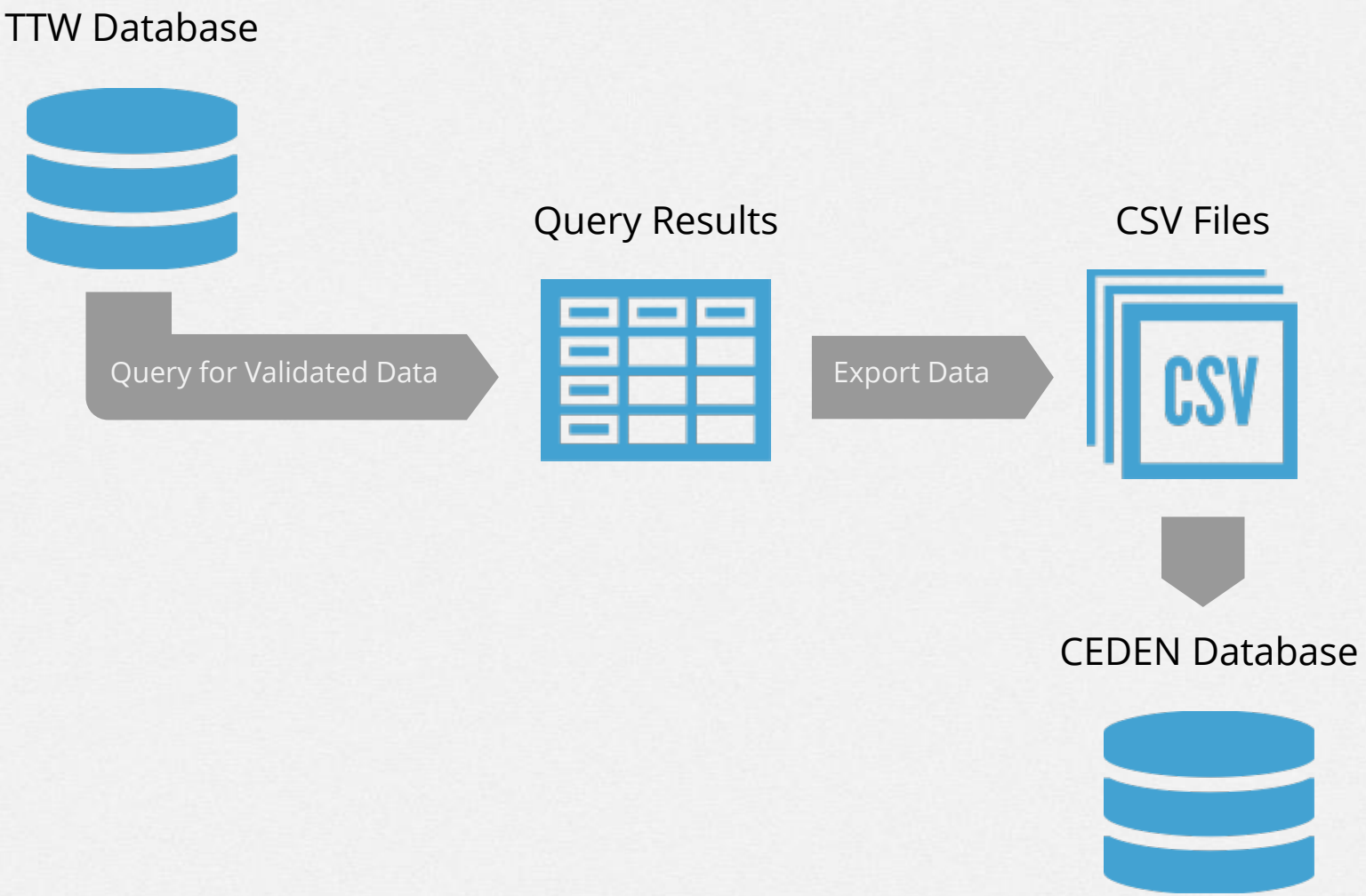
Data Validation for Submission to CEDEN





- User can only set the "Data is Validated" field to 'Yes', when all the applicable CEDEN validation rules are satisfied.

CA Data Compliance: Journey To CEDEN



- Query and output to CSV file and sent to CEDEN.

Data Records Submitted to CEDEN

Images | LabBook Records | Lab MetaData for Samples | Data Quality Assurance | Locations | Stations | Projects | Equipment | Calibrations | Data Validation | Submitted Data | Export Data

View Record

Show 10 entries

Search:

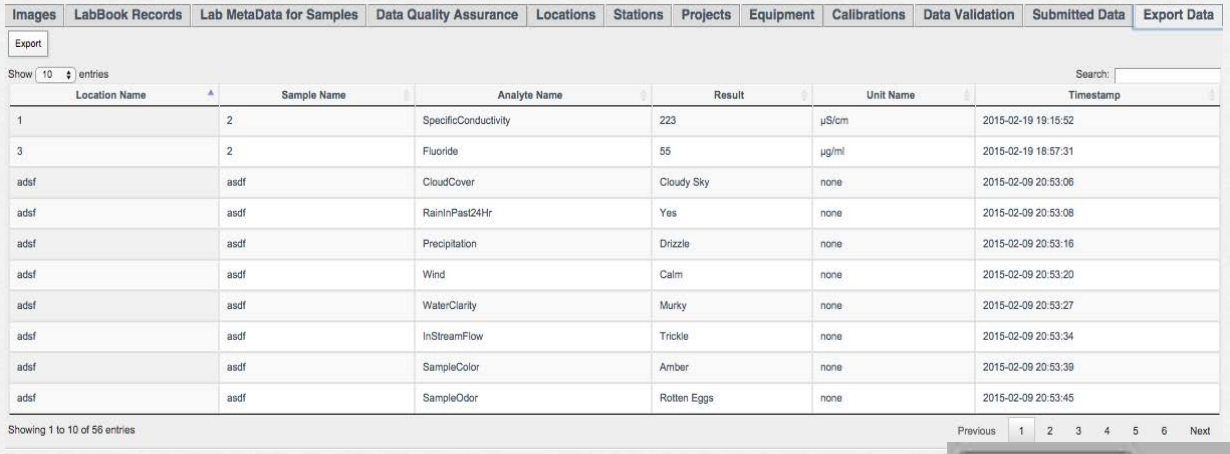
Location Name	Sample Name	Analyte Name	Result	Unit Name	Date Submitted to CEDEN
User1 data for user2 proj	1	Arsenic	99.1	mg/L	2014-11-05 07:07:35
user1 data user4 project	1	Benzene	12.22	ug/L	2014-11-05 07:07:35
User1's data for User1's project	1	E. Coli	100	CFU/100 mL	2014-11-05 07:07:35
user2 data user1 project	1	SpecificConductivity	15.5	uS/cm	2014-11-08 18:01:59
user4 data for user1	1	Enterococcus	223.12	CFU/100 mL	2014-11-05 07:07:35

Showing 1 to 5 of 5 entries

Previous 1 Next

- User can only set the “Data is Validated” field to ‘Yes’, when all the applicable CEDEN validation rules are satisfied.

Export Data Records for Report Tool



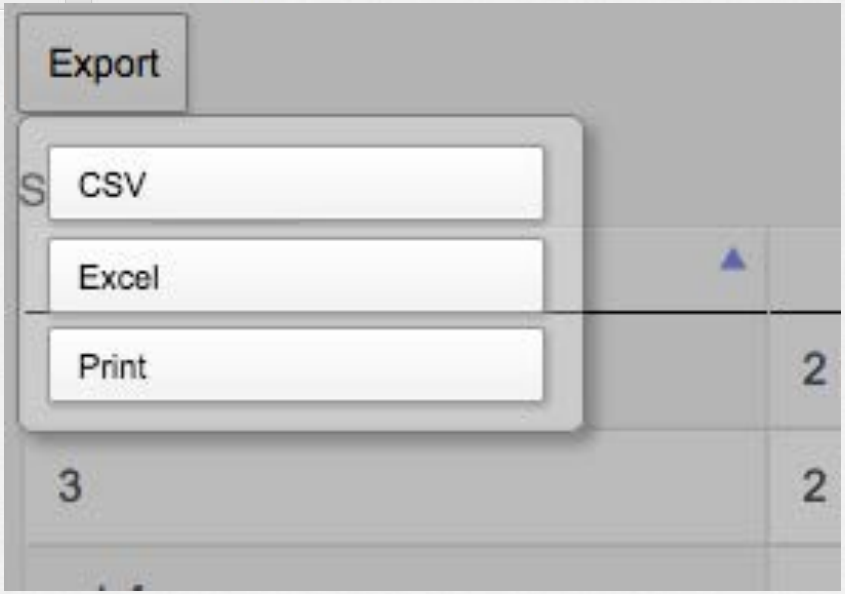
The Data Center provides the user an excel based reporting template. This tool allows the user to take control of their data. It provides functionality to do further analysis:

- Sort
- Aggregate
- Graph
- Trending Analysis

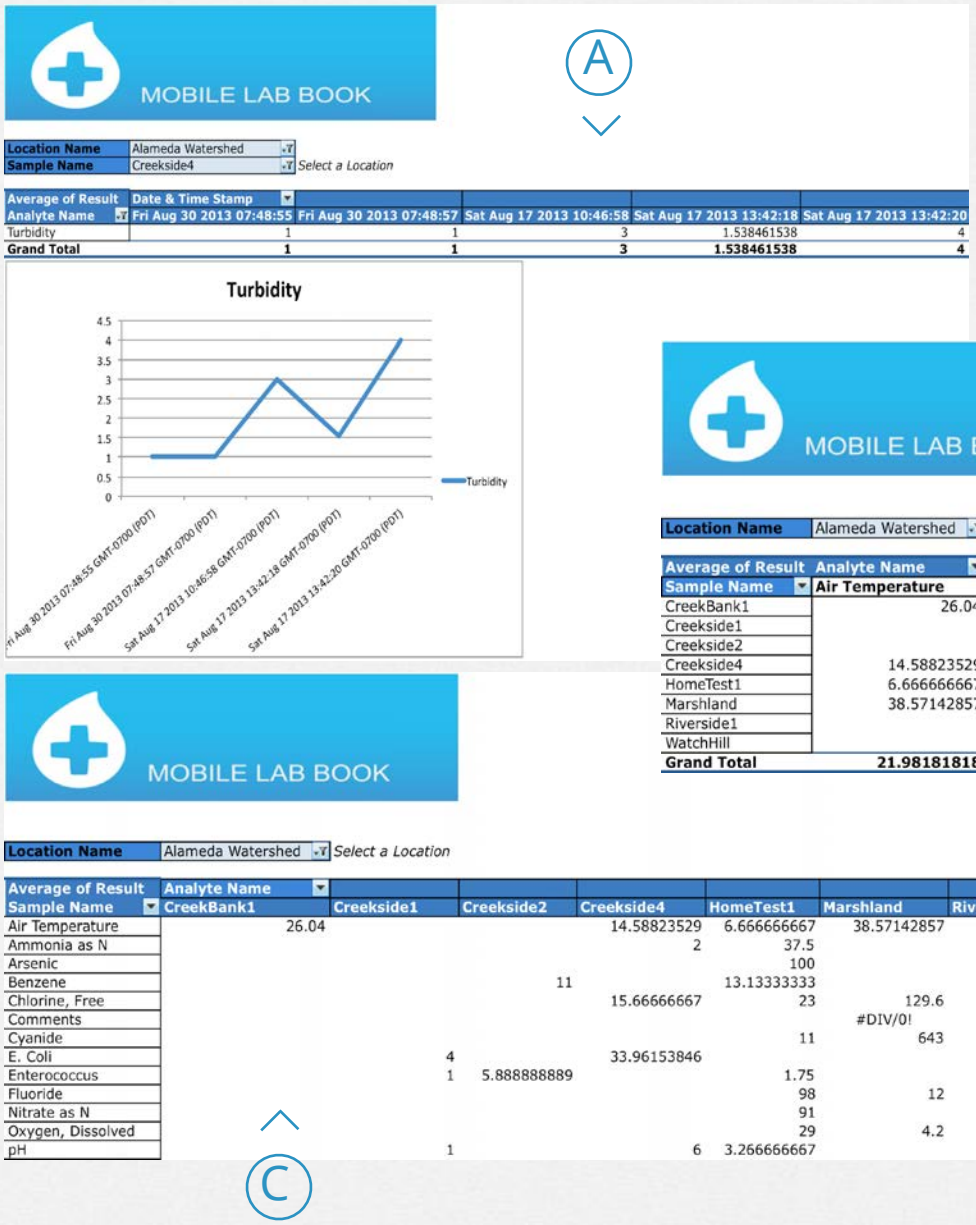
The Data Center allows the user to export their data in various formats to export to the reporting template:

- Excel
- CSV
- Print

The Reporting Template is designed to import the users data file that was exported from the Data Center



Report Tool



The reporting template comes built with active pivot sheets. These pivots provide:

- The user flexibility to “slice and dice” their data to make it meaningful
- The ability to perform trending analysis
- Comparison and Aggregation
- Graphing for data visualization

UI Fuctionality

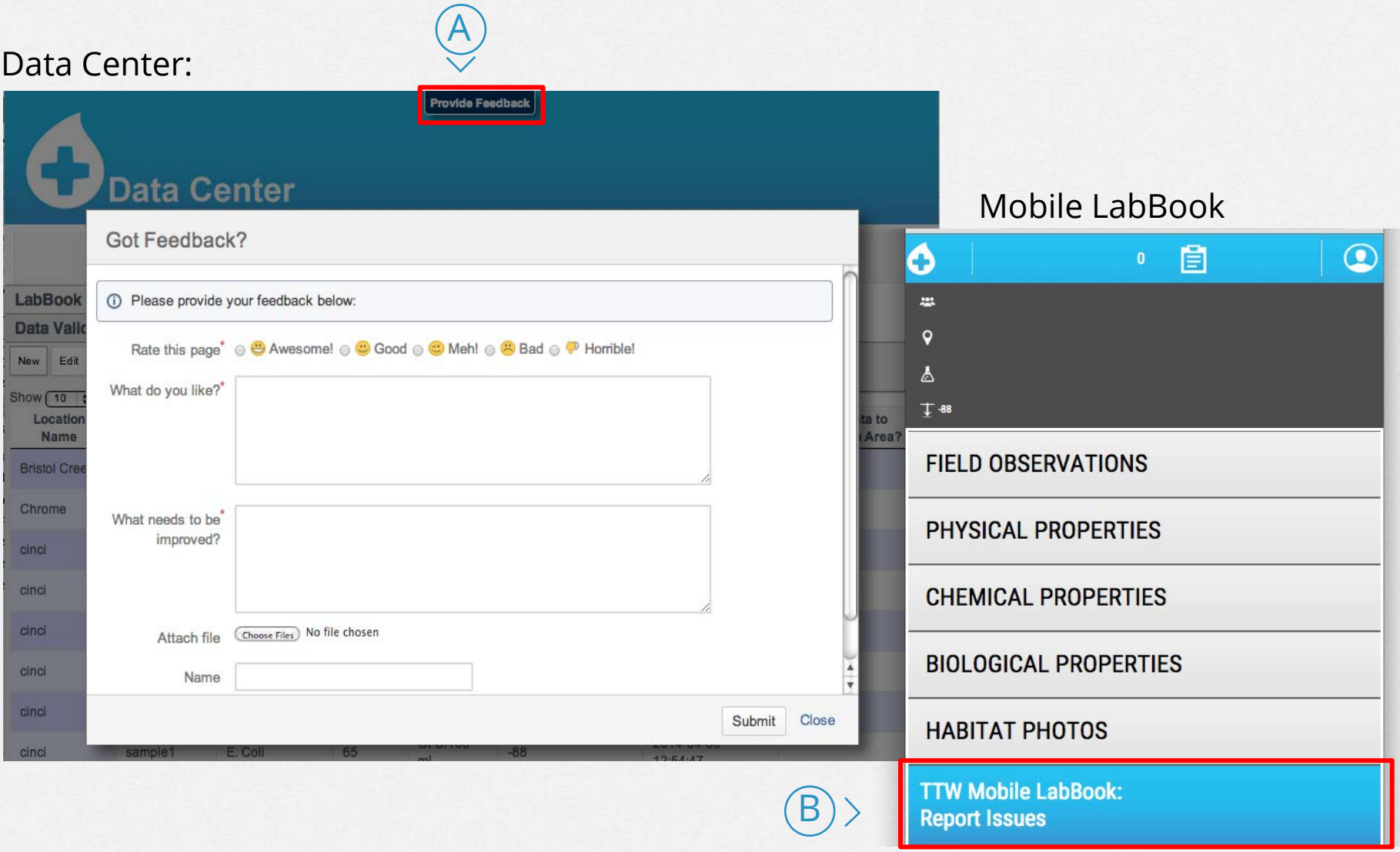
Ⓐ Graphing & Sorting

Ⓑ Compare Analytes by Samples

Ⓒ Aggregation

User Feedback

Data Center:



We welcome feedback from our users to identify system bugs, errors and enhancement requests.

Looking to the Future. Let's get there together!

We will be offering Business Licenses to funded non-profits and for-profits, offering various levels of support. While 'Citizen Scientist Volunteer Monitors' have the potential to bring larger amounts of data to States and the EPA for less cost than traditional data collection with potentially more continuous area coverage, TTW requires funding to fully support a large 'Citizen Scientist Volunteer Monitor Community' user base.

We are currently seeking support to make this happen. Let's work together.

Funding ⟹ TTW ability to support more volunteer monitoring/citizen scientist activities.

Special Thanks To:

- Erick Burres- California Clean Water Team
- Steven Steinberg- Southern California Coastal Water Research Project
- Cristina Grosso- San Francisco Estuary Institute, CEDEN Node Data Manager
- Revital Katznelson- UC Berkeley Extension Instructor
- The SFEI & CEDEN Teams
- Glen Warren
- Justus Bingham
- Zak Skrivanek
- Helen Fletcher
- Jim Tremblay
- Jami Coffman
- Curt Coffman
- Mike Carney

Do you want additional info?
Email us at info@4marbles.org, or contact me directly at leetremblay@4marbles.org. We look forward to working with you. Thanks!