

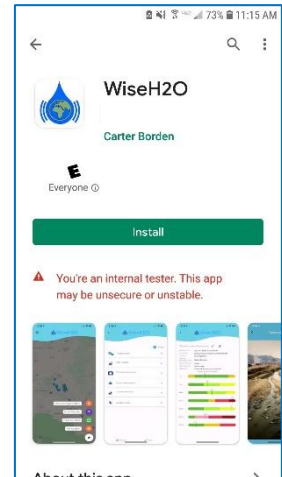
WiseH2O™ mApp User Guide

Welcome to the WiseH2O mApp! Included in this guide are instructions for how to download the mApp on either the Android or iOS platform. You will also find information on how to use the app, with examples. We hope you find the WiseH2O mApp as informative and fun to use as we do!

Downloading the mApp

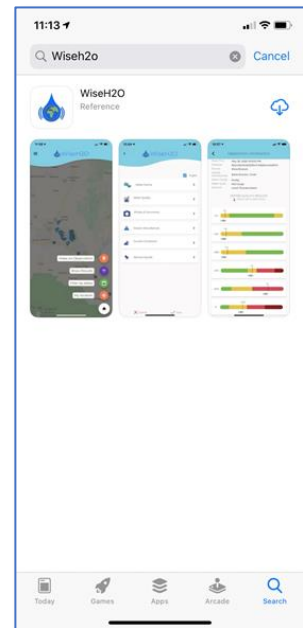
Android

1. **Go to the Google Play Store**
2. **Turn on wifi**, if possible, for downloading the app
3. **Search “WiseH2O”**
4. **Select and install**
5. **You are ready** to start using the WiseH2O app. Roam the world!!!



iOS – iPhone

1. **Go to the Apple Store**
2. **Turn on wifi**, if possible, for downloading the app
3. **Search “WiseH2O”**
4. **Select and install**
5. **You are ready** to start using the WiseH2O app. Roam the world!!!



Using the WiseH2O mApp

1.



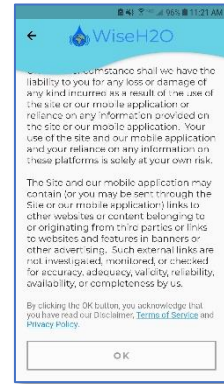
- Ensure phone is **charged**
- Turn on **location**
- Turn on **Wi-Fi** or **data**
- **Allow photos**

2.



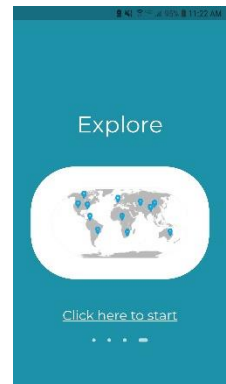
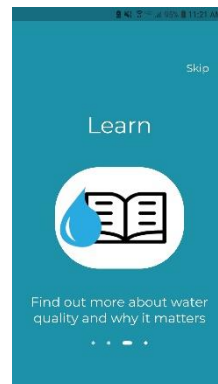
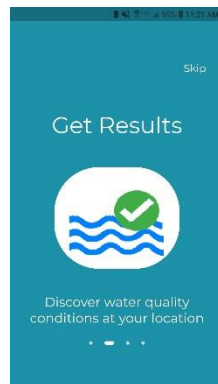
Create an **account**
Enter preferred email, password, and confirm password. An email will be sent asking you to confirm.

3.

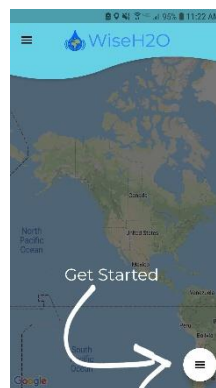


Review and agree to the **Disclaimer, Terms of Service** and **Privacy Policy**

4.



Scroll through the **Welcome Screens**

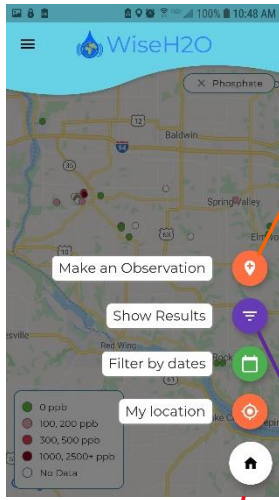


Tap the button to **Get Started!**

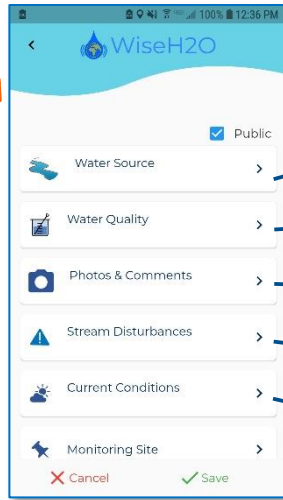


Overview of Screens

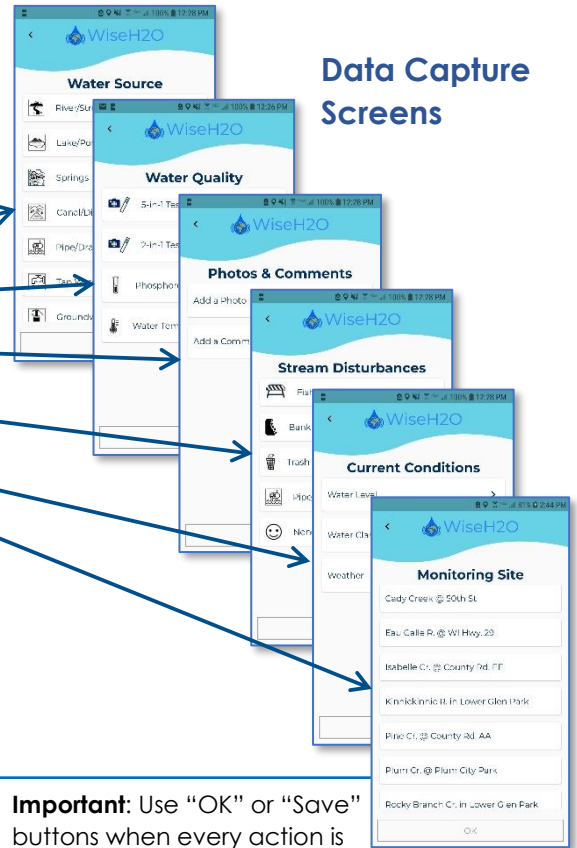
Options Page



Make an Observation

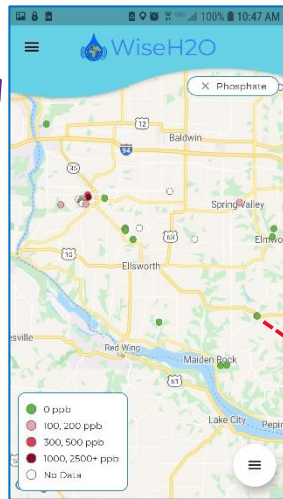


Data Capture Screens

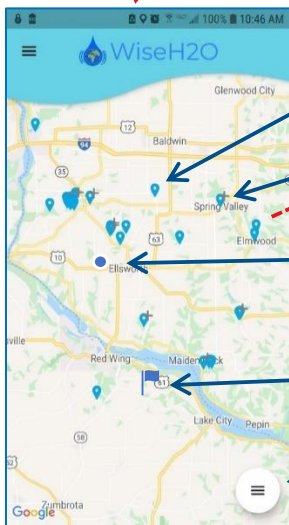


Important: Use "OK" or "Save" buttons when every action is complete, NOT the back button on your phone, otherwise you

Map of Results

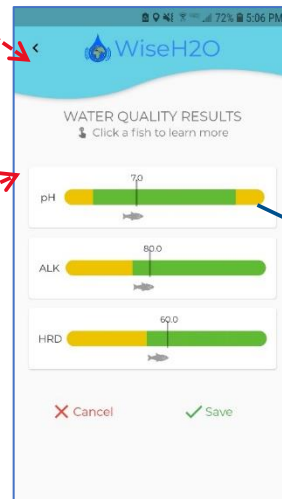


Home Page

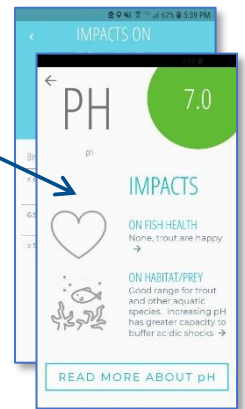


- Observations (Tear Drop)
- Multiple Observations (Plus "+" Sign)
- You are here (Blue Dot)
- Monitoring Site (Flag)
- Select to open Options Page

Observation Results



Educational Screens

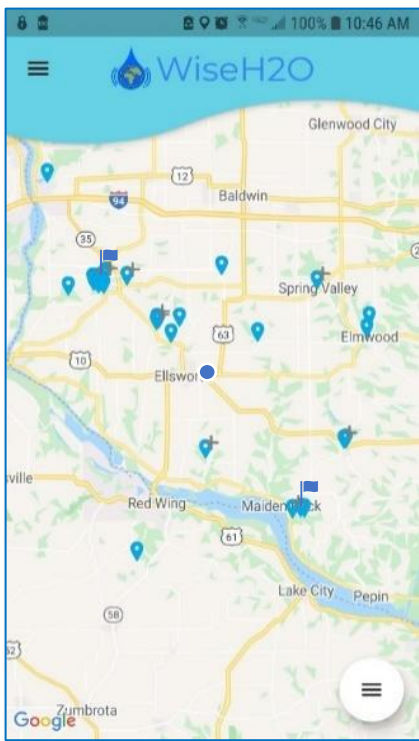


The map will zoom to your current location and show observation markers, if any observations have been taken in that geographic area.

When reviewing each screen, if you do not see all of the content, scroll down to reveal remaining content.

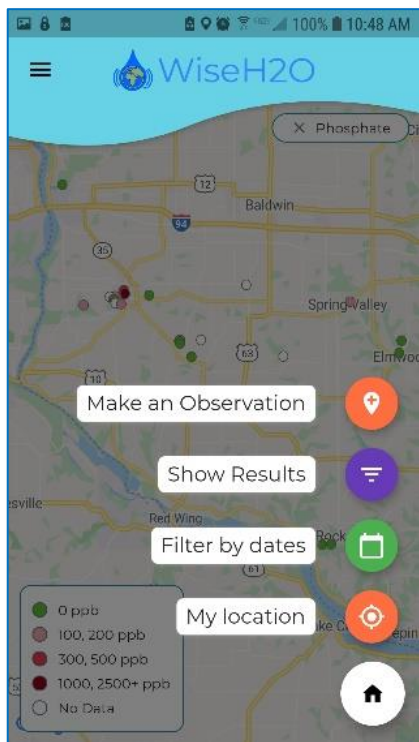


Home Page



- **Current Location:** You are here on the map.
 - 📍 **Observation Marker:** Indicates the source of the water being observed/sampled. Tapping on an observation point brings up the *Observation Results* page.
 - + **Multiple Observation Markers:** Represents multiple observations closely clustered together. As you scroll in, these will expand to individual observation markers.
 - 🚩 **Monitoring Location:** For monitoring networks, a flag marks the location of an individual monitoring station that is part of a predetermined set of monitoring stations (e.g., part of a specific monitoring plan).
 - ☰ **Option Page (Lower Right Corner):** Activates the Option Page (see below)
 - ☰ **Preferences (Upper Left Corner):** Terms of Service, Privacy Policy, and Logout (drag screen left to close it).
- General map navigation:** Users can navigate the map by dragging across the screen to move the map and spreading or pinching two fingers together to zoom out and in.

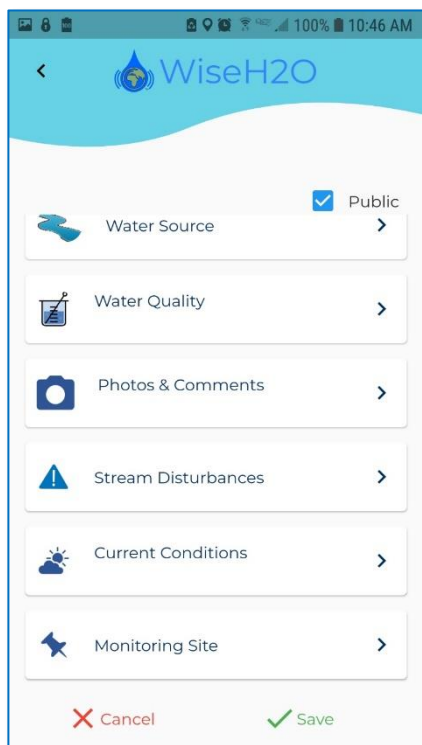
Options Page



- 📍 **Make an Observation:** Opens the "digital field notebook", allowing you to make observations at your location. See the *Make an Observation Page* (below) for the data that can be collected.
- ☰ **Show Results:** Opens a menu from which to select the information of interest. This is a great way to get an overview across the landscape of all values for each observation type. There are descriptors at the top right of the map of the specific observation, which can be closed by tapping the "x" mark which will bring you back to the Home Page. Or, you can select the icon in the lower right corner to go back to the Options Page.
- 📅 **Filter by Date:** Allows you to select and view observations collected only during a time period of your choice. For example, if you want to know the water level or clarity of streams in the past week, you can select "Last Week" from the menu of date options.
- 📍 **My Location:** Re-centers the map to your current physical location.
- 🏠 **Home Button:** Returns to the *Home Page*.



Make an Observation



Water Source: Indicate the source of the water being observed/ sampled



Water Quality:



- Use a 5-in-1 test strip, a 2-in-1 test strip, calibration card, and camera on the phone. Dip a strip, wait 30 seconds, take picture, send the picture, and get concentrations back when connected to a network (refer to *Make Water Quality Measurements with Test Strips* below).



- Manually select a phosphate concentration from the list of seven concentrations (refer to *Make a Phosphate Measurement* below)



- Select temperature using slider bar (refer to *Select Water Temperature* below)



Photo & Comments: Take a picture and/or add notes about the conditions at your location. To add comments, tap "Add a Comment," and then tap within the box that says, "Enter your comment here." Add your input, then tap "OK" when notes are complete. Users can add comments to further document any observations or conditions at the site (maximum of 140 characters, spaces included).



Stream Disturbances: Indicate the stream disturbances present. One or multiple choices possible.



Current Conditions: Select the current *Water Level*, *Water Clarity*, and recent *Weather* conditions.



Monitoring Site: If the observation is at a pre-determined monitoring site, select from the list of site location options.

Public v. Private: A user may wish to keep his/her observations from public viewers. Clicking this toggle to "Private" will not display the results to the greater public but will be viewable by super users (sponsoring agency: e.g. TU staff). (Note: all observations are currently set to "Public", as the default mode).

Save/Cancel: Choose to save the observation or cancel the observation

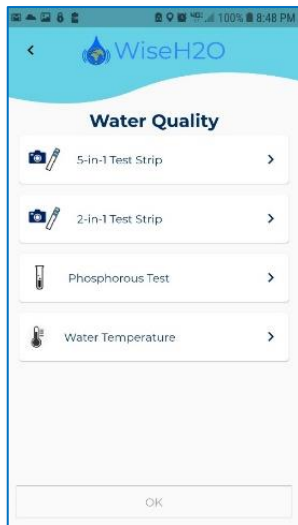
Select a Location to Take Water Quality Measurements

Before making **Water Quality** measurements (5-in-1 test strip, 2-in-1 test strip, phosphate test, and water temperature), select a location where the water is well-mixed and representative of the water source you are monitoring. In streams and rivers, avoid side channels, backwater areas, and the influence of smaller tributaries immediately upstream. When dipping test strips and taking a sample for phosphate testing, face upstream (into the current) in flowing waters. Regardless of the water source, make sure that you are not sampling in any plume of sediment that you've created while wading in the water.



Make Water Quality Measurements with Test Strips

General procedures



Two types of test strips are available for water quality measurements via photography:

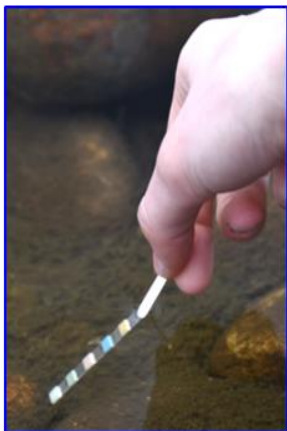
5-in-1 Test Strip: Makes measurements of alkalinity, hardness, pH, nitrite-nitrogen, and nitrate-nitrogen. Nitrite- and nitrate-nitrogen measurements made with the 5-in-1 test strip are coarse estimates indicating a minimum detectable limit this is not often observed in natural surface waters (e.g., Driftless Area). Therefore, measurements will be recorded in the database, but may not be reported to the user. If more accurate nitrite and nitrate measurements are desired, use of the 2-in-1 test strip is strongly advised.

2-in-1 Test Strip: Makes measurements of nitrite-nitrogen and nitrate-nitrogen at more refined concentration ranges like those to be expected for areas like the Driftless Area.

The use of both test strips is encouraged to obtain the best measurements for all 5 water quality variables.

Test kits are available at <https://www.mobileh2o.com/shop>.

To conduct a test strip observation



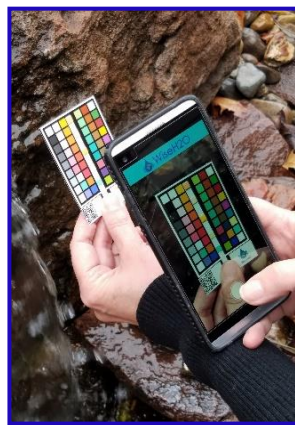
1. Dip a test strip in water, swirl twice, and lift without shaking



2. Lay strip on center of card



3. Wait 30 seconds after dipping test strip



4. Take a photo within 90 seconds of dipping strip.



5. Get results

Important: Please handle all test strips on the ends, taking care not to touch the test strip pads.



Details for Taking a Photo and Submitting a Test

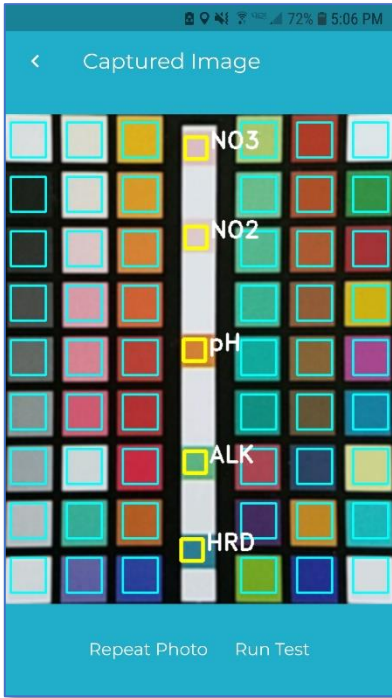


1. Taking the Picture: Align the calibration card within the green box, as shown, ensuring that all of the calibration card edges are within the green box. Take the picture using the *Camera* icon (lower right). It is best to take the photo in **full shade** to prevent shadows across the image. For ease, put your back to the sun and ensure the entire card and test strip are shaded.

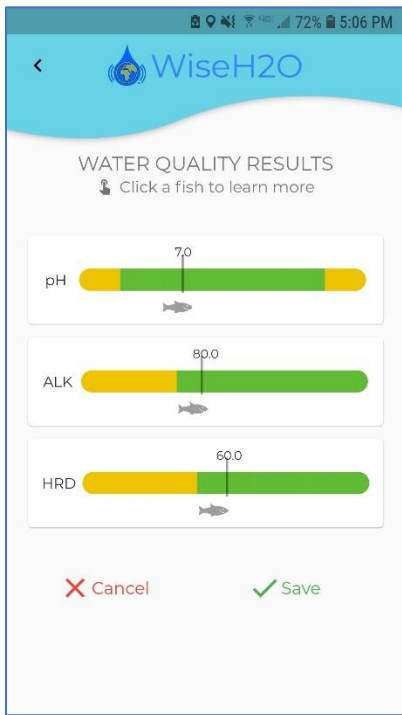


2. Check the image: If the card and test strip are aligned within the photo, then select the *Save Image* button. If not correct, select *Repeat Photo* to return to step 1.





3. Check the card alignment: A good photo will align within the green boxes on all the color swatches. If the swatches are correctly aligned, then select the *Run Test* button. If the pads do not line up, select *Repeat Photo* to return to step 1.

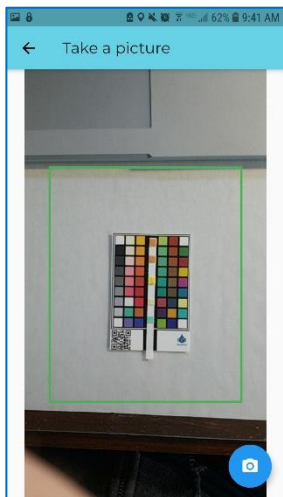


4. Read and Save Results: Read the results and press the *Save* button to save results. If unsatisfactory, press the *Cancel* button.

Note: Use of the 5-in-1 test strip will only show results for pH, Alkalinity, and Hardness, although the data for Nitrite- and Nitrate-Nitrogen are recorded in the database even though they are not shown. To get more refined Nitrite- and Nitrate-Nitrogen measurements, use of the 2-in-1 test strip is highly recommended. Using both types of test strips will display the results for all 5 analytes.



Tips for Taking Better Pictures – What **NOT** to do



Camera too far away



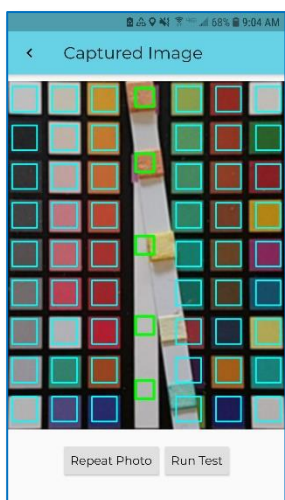
Camera too close



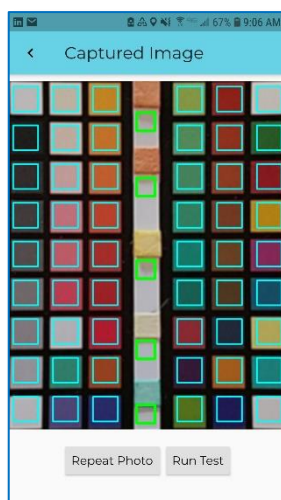
Strip not aligned



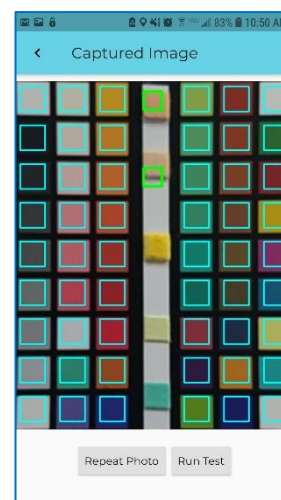
Shadow across image.
Take photo in full shade.



Test strip not aligned



Test strip pads not aligned



Wrong test! Calibration boxes
must match test pads. Switch
tests.

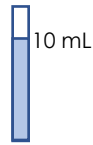
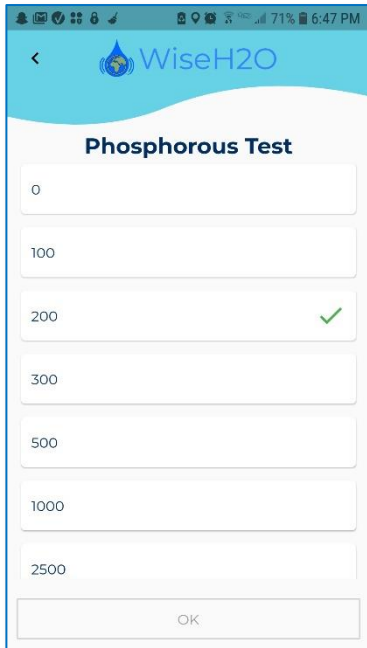
Kent's Tips on Using the Calibration Card

The calibration card may be glued to a piece of foam core board to stabilize the card (see photo at right), thereby allowing it to be placed on a flat surface for photographing the test strip. The test strip can be clamped to the foam core board. A clipboard can also be used to stabilize the calibration card and secure the test strip. Placing the foam core board or clipboard on a flat surface makes it easier for the user to position the phone camera correctly and take a good photo.



Make a Phosphate Measurement

Procedure for making a phosphate measurement (this procedure is also available on the test kit).



Look down
through
tube

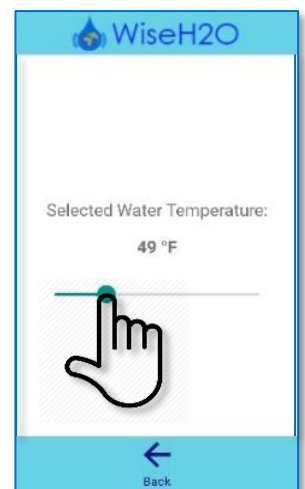


1. Rinse the test tube three times with source water, then fill the tube to the 10 mL fill line. When collecting the phosphate sample, avoid scum on the water surface, which can bias the measurement. If water depth is sufficient, invert the empty test tube after rinsing and dip it top-down into the water; then tip the tube upright, fill it underwater, and remove from the water. Pour off any excess water, to the 10 mL fill line.
2. Remove one test strip from the bottle. Close bottle cap tightly after removing strip. Gently bend strip in half (do not fold), with the pads facing inward. Place strip inside test tube cap (as shown).
3. Cap the test tube and slowly invert it 5 times, allowing the bubble to go back and forth, from the top to bottom and bottom to top each time.
4. Remove the cap and test strip.
5. Place bottom of test tube on white boxed area of color chart on the test kit bottle. Look down through OPEN test tube (as shown) and compare to color chart. Select the phosphate concentration with the color closest to that in the test tube.
6. Enter the phosphate concentration into the WiseH2O mApp.
7. After testing is complete, rinse the phosphate test tube in clean (tap) water at home (do not use soap) and allow the tube to air dry.

Select Water Temperature

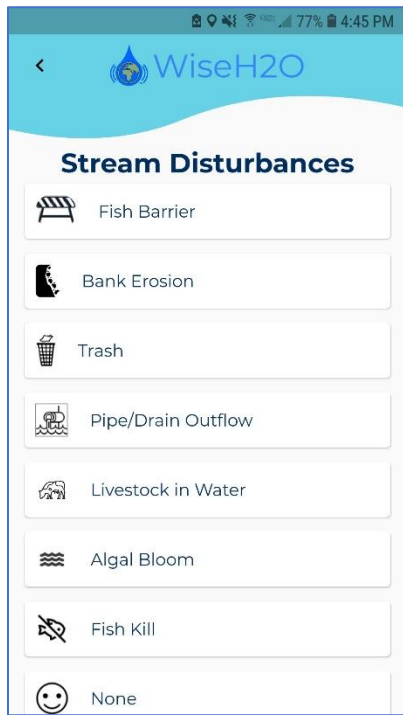
Using a **reliable** thermometer*, make a water temperature measurement to the nearest degree Fahrenheit. Move your dry finger along the slider bar until the correct water temperature is reached.

* Digital instant read thermometers are available at <https://www.mobileh2o.com/shop>



▲ Stream Disturbances

Stream disturbances are physical, chemical, and biological deviations from natural stream conditions that potentially impact fisheries habitat. In the WiseH2O mApp, choose one or more **Stream Disturbances** that apply to an observation location. If no disturbances are present, choose "None", as that observation also provides important data for understanding site conditions.



Tip: In addition to noting **Stream Disturbances**, photographing and adding comments about these disturbances is a great way to further characterize and document them. It is often helpful to note the source of the disturbance in the comments if it is not readily apparent in the photo(s).

Fish Barrier: A structure or condition that prevents movement of fish. Barriers include dams, levees, weirs, culverts, diversions, and low flow conditions.

Bank Erosion: Exposed soil on the streambank that is being scoured (eroded away by water); or a streambank that is likely to or has collapsed, creating a bare and near-vertical face.

Trash: Significant litter that has been carelessly cast about, or illegally dumped trash on the streambank. This also includes collections of litter/trash that have been deposited on the stream bed and banks by river flow.

Pipe/Drain Outflow: Water (effluent) flowing into a water body from a pipe or drain ditch. The effluent water quality can range from clear and odorless to brown, muddy, and odiferous.

Livestock in Water: Livestock (e.g. cows, goats, sheep, pigs, buffalos, llamas) within the stream or its banks.

Algal Bloom: A green or blue-green discoloration of the water by an overabundance of algae.

Fish Kill: Multiple dead fish are present in a river reach (segment), beyond that expected from normal mortality. The cause is typically poor water quality (e.g. high-water temperature, excess chemicals, lack of dissolved oxygen), often associated with a manure spill and/or herbicide/pesticide use. Measurements with the 5-in-1 and 2-in-1 test strips and phosphate test kit may be helpful to identify this cause. Also make some basic observations of fish species, approximate number of dead/dying fish, and any apparent cause. **Fish kills should be immediately reported to the state natural resource management agency**, for their investigation of the full impact and cause.

MN: State Duty Officer: 1-800-422-0798

WI: 1-800-TIP-WDNR or 1-800-847-9367

IA: Contact local field office or call 1-515-725-8694

IL: <https://www.ifishillinois.org/contact/contact.php>

None: No stream disturbances are present at the observation site.

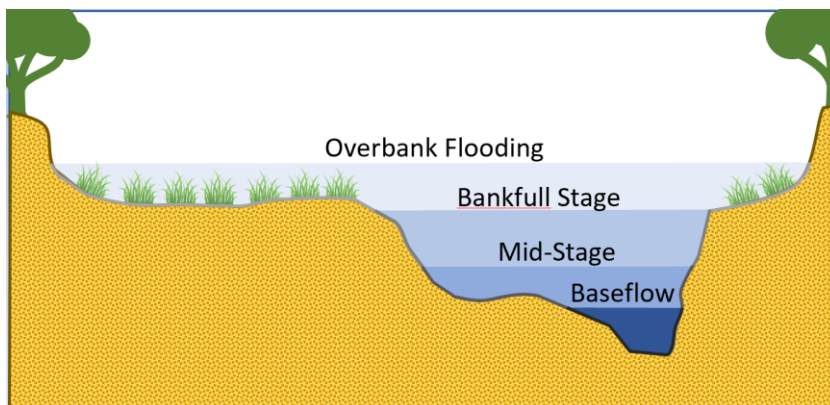
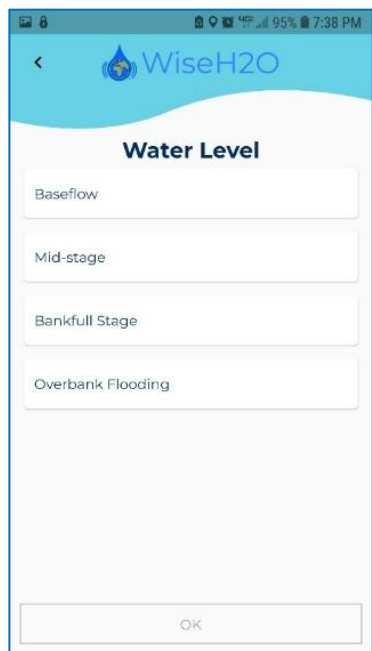


Identify Current Conditions

The **Current Conditions** option reports the water level and clarity of the water body, as well as recent weather occurrences that may influence the amount of water present and/or water quality.

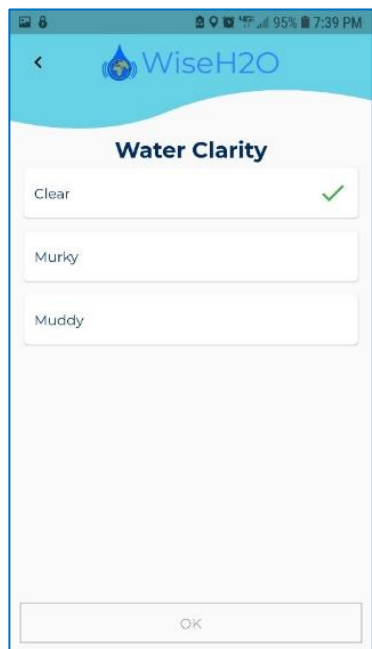
Water Level

Water level in the water body



Water Clarity

Describes the transparency of the water due to suspended sediment (silts and clays, or potentially other chemicals, algae, etc, present in the water body.



Clear: Water is easy to see through (transparent), typically to the bottom of a stream or river. Note that water can be stained with tannins (tea-colored) but still clear, as it is not carrying fine sediment that decreases transparency.



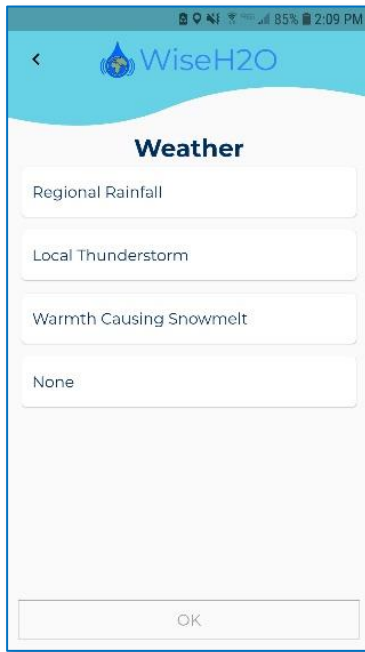
Murky: Water is difficult to see through clearly but is not entirely opaque. General rule, if you were to hold a clear water bottle filled with murky water, you could still see your fingers through the bottle.



Muddy: Water is an opaque, brown color (e.g. chocolate milk), typically with a high level of suspended sediment.



Weather



Select the menu item that best describes the weather during the **past 24 hours** that could raise water levels:



Regional Rainfall: Large low-pressure weather systems that move through a broad, regional area, creating wide-spread rainfall.



Local Thunderstorm: Local convective storm cells that produce short showers of minutes to hours, often with high rainfall amounts.



Warmth Causing Snowmelt: Warm conditions that melt the snowpack.



None: No significant weather event has occurred during the past 24 hours.



Educational Information

You have just collected water quality data, but how does this impact the fish and their habitat?

Observation Results Page

By selecting the fish icon, you can learn more about water quality issues specific to the water you are monitoring. Included in this messaging is information on the impacts on fish health, habitat, and prey. This additional educational material is included for pH, alkalinity, hardness, nitrate, nitrite, phosphate, and temperature.

