The AQWA Toolkit

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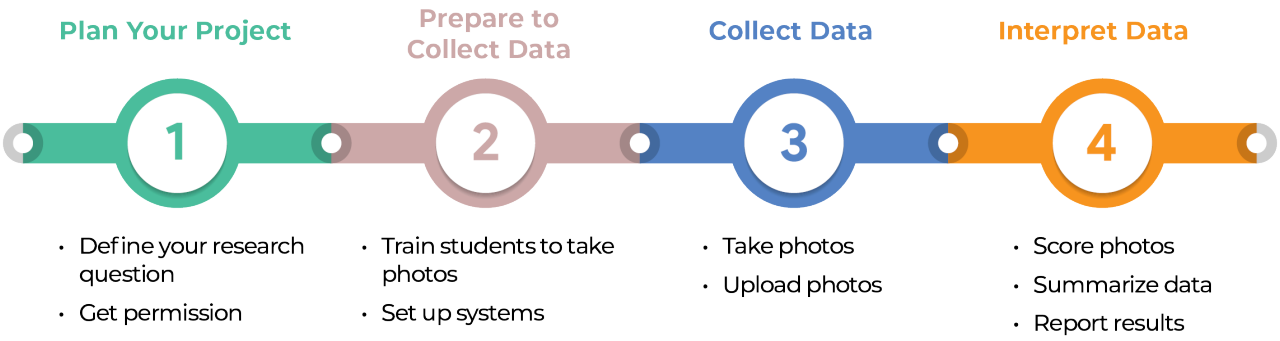
This PDF document includes the following materials:

The research to develop AQWA was supported by a grant from Healthy Eating Research, a national program of the Robert Wood Johnson Foundation. Toolkit development was funded by the WK Kellogg Foundation.

Photo-Evidence Tool Process Overview

Welcome to AQWA, the Assessing Quality of Water Access Photo Evidence Tool!
This document provides an overview of how to use the Photo Evidence Tool from start to finish.



1. Plan Your Project
   - Define Your Research Question
     - **Choose Schools** – What information is useful for you and your group? Identify the information your group is interested in and choose schools appropriately. You might photograph all the schools in your district, or a sample, etc.
     - **Choose Water Sources** – The tool works for a wide a variety of drinking water sources. **Your group must choose** which types of water sources are most appropriate for your project goals. For example, you may plan only to include water sources required by the Child Nutrition Act, in the places where meals are served. Or you may plan to include every drinking water source on campus – or some other agreed-upon subset of drinking water sources. Whatever water sources you are photographing, make sure your data collection team is in agreement, and then make sure each water source is correctly mapped and labeled accordingly.
   - Get Permission from Appropriate School Officials
     - Be sure to allow time to get permission from the school district or principal.

2. Prepare to Collect Data
   - Train Citizen Scientists to Take Photos
     - **Instructional Video** – The 4-minute video demonstrates what the photo-taking process will be like in real time. This video can also be shown as a refresher before your team heads out to take the photos.
     - **Training Webinar** – The webinar talks through the photo-taking process step by step. It is a verbal explanation of the protocol document and gives more detail on the process. Be sure to provide copies of the protocol to follow along while watching the webinar.
   - Set up Systems
     - **Assign School Codes** – Each school should have a unique code to be used on source information cards, source labels, and the file names for the photos. An acronym or abbreviation works best.
     - **Prepare to Label Accurately** – Many of the protocol how-to's are about how to label photos correctly. Maps, source information cards, source labels, photo type cards, and the file names for the photos must all be accurately labeled. Accurate labeling at each step will ensure that later you will be able to tell which water source is which.

- **Create a Shared Drive** – This could be done through Google Drive, Dropbox, or any other platform that works best for you and your group. You need a place where the photos can be uploaded or stored in an organized way. Create folders for each school with the school name and school code, and each school district, if applicable.
- **Prepare Data Collection Kits** – Take some time before heading out to ensure each team has the necessary supplies for the project, which are listed both on the Protocol and the Summary Checklist. It might be handy to store these in a ready-to-go tote or bag.
- **Determine Your Plan** – Divide students into teams of at least 2 to map and photograph the agreed-upon drinking water sources. You may choose to map on one day and photograph on another. The way you choose to divide the work is up to you.

3. Collect Data
   - Take Photos
     - Make sure each team of students has their data collection kit when they visit the schools. Photographing at each school should take about 10 minutes per water source. Allow time for transportation!
   - Upload and Label Photos
     - **Label Accurately -** Once they have taken their photos, students can upload them to the appropriate school's folder. Make sure students are able to access the shared drive where the photos are stored. Uploading the photos can be done over wi-fi at a later date if needed. Ensure files are named according to the instructions in the protocol.

4. Interpret Data
   - Score Photos
     - Scoring is what gives the photos meaning. You will be scoring each water source's cleanliness, access, and flow, as well as noting if cups are provided and if promotional signs are displayed.
     - Set up a Google Form using the link provided in the Data Entry and Scoring Instructions to score each water source and spout.
     - Photos should be scored using consistent standards. If students are scoring photos, we recommend they work together in pairs. If staff or other adults are scoring the photos, they can work alone.
   - Summarize Data
     - Once your photos have been scored, the data can be summarized using the provided Excel workbook. We have included tables to summarize water source location, obstructions/physical access, presence of cups and promotional signs and posters, as well as water spout-specific wear, water flow, and cleanliness.
     - Use the scoring instructions provided to export data from your Google Form and add it to the workbook to generate summary statistics.
   - Report Results
     - The type of report that you generate, and what you include in it, will vary depending on to whom your group plans to report results. This final step is best determined by your discretion and that of the group you are working with.

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Dear Students and Citizen Scientists,

Included in the toolkit with this letter you will find the following materials to guide you through your photo evidence project:

- Process Overview and AQWA Links
- 35-minute Training Webinar and link for 4-minute "Protocol in Action" video
- 10-page Photo Taking Protocol, Checklist, and 2 Labeling Templates
- Data Entry and Scoring Instructions and Scoring Formula Workbook

How did the Assessing Quality of Water Access (AQWA) Photo Evidence Tool come about?
We, a group of researchers at the University of California and the University of Washington wanted to find a way to collect as much data as possible about drinking water access. But, individually going to schools across the country is expensive and time consuming. To make a project like this feasible, we imagined enlisting the help of citizen scientists. We then developed and validated the AQWA Photo Evidence Tool, making sure that it accurately captures drinking water access information when used by student scientists.

Why is water important?

- It is healthier to drink plain water than soda or other sugary beverages.
- Plain water as a main thirst quencher benefits oral health, cognition and mood and elimination of toxins from the body.
- Cutting back on sugary beverages can help prevent cavities, maintain healthy weight, and prevent conditions like diabetes.

But what if there is no access to free water in the places you spend most of your day? It's difficult if the only appealing water is bottled water you have to pay for. When schools provide access to drinking water, it gives students a healthy alternative to sugary beverages.

Where does this photo-taking activity fit in?
When we performed our research, the students in our study used the tool to help show that the tool is valid. Now that it has been validated, the students we send the tool to – like you – can use it to make healthy changes in your schools and school district! You can play an important part in ensuring that drinking fountains and other water sources are suitable for drinking by being involved in this activity. The evidence you collect with the AQWA tool will establish facts about access to drinking water, that can then be used to make the case for improvements or more resources to address this problem. Imagine if students and schools across the country did what you are doing! This could lead to a lot more students drinking plain water at school and, therefore, students with better health.

Have fun and happy photographing!
Christina Hecht, Anisha Patel, and Mary Podrabsky

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Assessing Quality of Water Access Toolkit Links

Link to 4-minute Instructional Video
https://www.youtube.com/watch?v=C61TwCLymM8&amp=&feature=youtu.be

Links to 35-minute Training Webinar

1.) Streaming recording link:
https://danaher.webex.com/danaher/ldr.php?RCID=e9f06941665831de20673d8c1a66a433

2.) Download recording link:
https://danaher.webex.com/danaher/lsr.php?RCID=ed84792b1b511794954b127658f53751

Link to PET Scoring Data Entry Form (Google Form)
https://docs.google.com/forms/d/1bAhLq4TRpOptPHj-zsIJ7qap8mtCtCeacw4FTs1PvdI/edit

Assessing Quality of Water Access Research Papers

Patel AI, Podrabsky M, Hecht AA, Morris S, Yovanovich S, Walkinshaw LP, Ritchie L, Hecht C. Development and Validation of a Photo-Evidence Tool to Examine Characteristics of Effective Drinking Water Access in Schools. *Journal of School Health* 90(4):271-277. DOI: https://doi.org/10.1111/josh.12873.

Walkinshaw LP, Hecht C, Patel A, Podrabsky M. Training High School Student "Citizen Scientists" to Document School Water Access: A Feasibility Study. *Journal of School Health* 89(8):653-661. DOI: https://doi.org/10.1111/josh.12790.

Resources to Improve School Drinking Water Access

"Effective Access to Water in Schools." Infographic on the keys to effective access to drinking water, found at https://www.drinkingwateralliance.org/facts

"Healthy Hydration: Ensuring access to safe water in schools." Checklist and resources for water safety, access and promotion at https://9c073bb6-f7ef-48b6-ad05-b37094ec4e4f.usrfiles.com/ugd/9c073b_1e37b4417e7641abb4da3473e0b0154d.pdf

Cooper A, Altman E, Hecht C, Bruce J, Patel A. Stories of success: A qualitative examination of contributors to excellence in school drinking water access. *Public Health Nutrition* 23(10):1800-1809. DOI: https://doi.org/10.1017/S1368980019003975

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Source Information Card

School ID: (this code will consist of letters and will be provided to you)	**Water Source Number:** (this number will match the one that you have given this water source on the school map)	**Water Spout Letters: (if applicable**- spout letters are only used if the water source location has more than one spout**)**
Date:	**Time:**	**Camera or Smartphone Make/Model:**

Where is the water source located?

- ☐ **Food service area** (cafeteria, dining hall, etc.)
- ☐ **Outdoor active area** (e.g. blacktop, playground, field)
- ☐ **Other:** _____
- ☐ **Indoor active area** (e.g. gym, multi-purpose room)
- ☐ **Hallway** (e.g. indoor hallway, outdoor passageway)
- ☐ **Classroom**

PHOTO TYPE CARDS:

Please cut these cards out.

CUPS	**POSTERS**
DISTANCE	**CLOSE**
DIRTY	**DISPENSE**

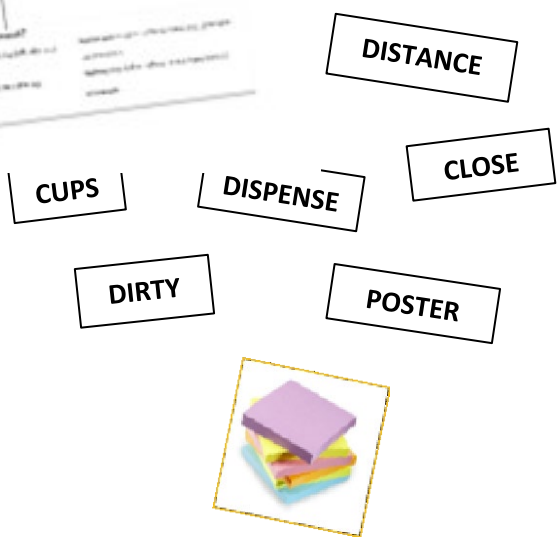
Photo Evidence Tool Protocol

The goal of this project is to document the FREE* drinking water that is available to students in schools. By taking these photos, you are helping to increase awareness about school drinking water access, and to make the case for improvements by documenting where change is needed. *Note: if drinking water is sold in vending machines, you may also choose to take photos that document the availability and price of bottled beverages.

This protocol requires at least two people working together. Please read through the entire protocol before you begin.

Equipment Needed:

- Smartphone or digital camera – fully charged
- Black or blue pen, and a red pen
- Scissors
- Tape
- Large 'Source Information' cards – download these
- Small 'Photo Type' cards – download these or make your own
- Sticky or 'post-it' notes or small slips of plain paper
- Measuring tape and standard ruler



This protocol has SIX STEPS:

1. Obtain a school map and identify and label FREE drinking water sources in key areas of the school campus on the map.
2. Create source information cards.
3. Create source labels.
4. Create photo-type cards.
5. Take specific photos of the water sources with their identification cards and labels visible in each photo.
6. Upload final photos and school maps to the shared drive provided by your project leader or advisor.

STEP 1

Locate, map, and label FREE drinking water sources

1. Obtain a school map from the school's main office.
2. Work with the school's staff (e.g. facilities staff, principal, food service manager) to locate and identify the drinking water sources from any of the following areas:
   a. **Food service area** where students are served food (e.g. cafeteria, dining hall, etc. where meals are served)
   b. **Outdoor** area where students are physically active for PE/recess (e.g. field, blacktop, playground)
   c. **Indoor** area where students are physically active for PE/recess (e.g. gym, multi-purpose room, etc.)
   d. **Hallway or passing area**
   e. **Classroom**

NOTE:

i. The list above is of school areas that typically have water sources. Your group must define the water sources you will photograph for your drinking water access documentation project.

ii. **Do not count water sources not typically used for drinking** like a hand-washing sink or science laboratory sink.

Example of water source types:

Insulated Cooler


Uninsulated Dispenser


Bottleless Water Cooler


Bottled Water Cooler

Bottle-Filler


Sink

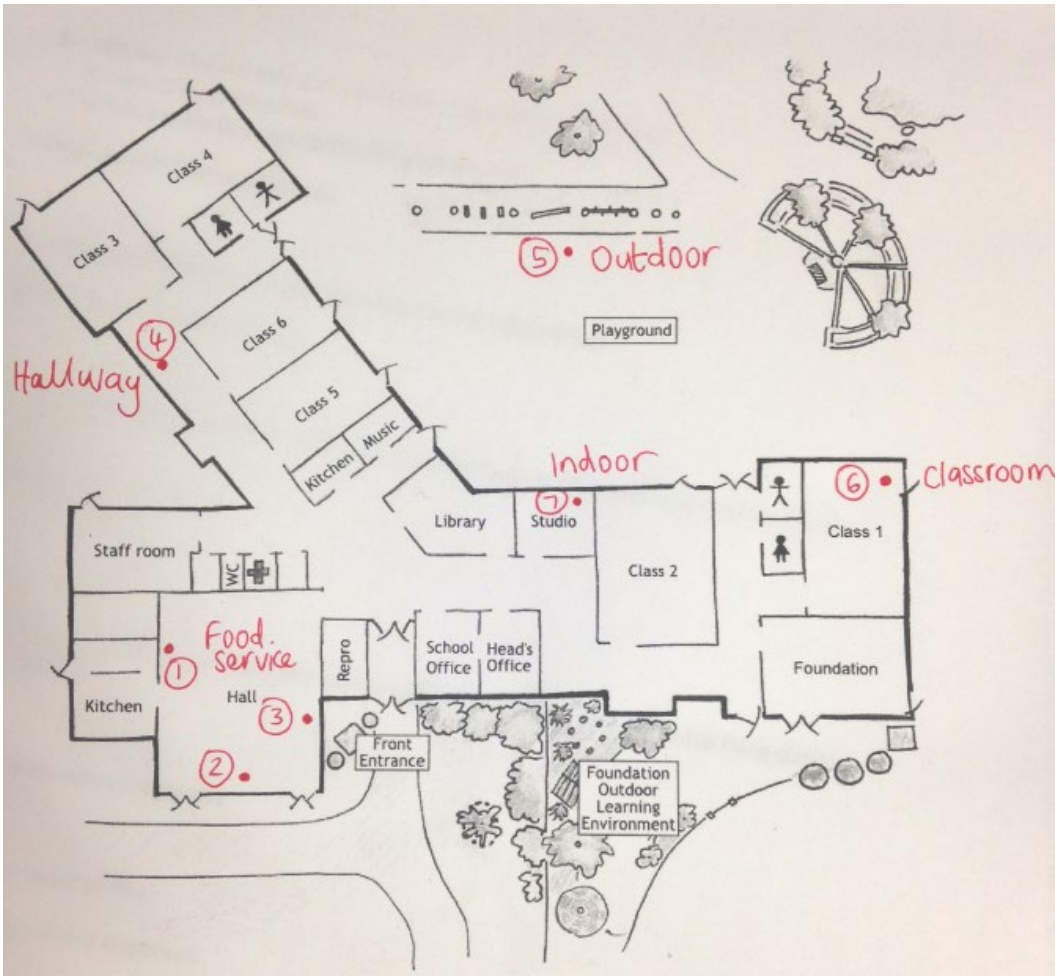

Fountain


Individual Bottled Water


Pitcher

1. Mark the location of only the water sources you have chosen to photograph with a dot (●) on the map.
2. Number each marked (●) water source consecutively on the map (1, 2, 3, etc.)
3. Label each water source on the map as either:
   - Food service ** **IMPORTANT: in addition to existing water dispensers, these photos must capture water that is only put out during meal time (pitchers, individual bottles, water coolers, etc). If it is not possible for your team to be there near or during meal time (breakfast or lunch), find out if the foodservice staff put additional water out at meal time. If they do, identify someone at the school who can take the foodservice photos for you, using the protocol. Put dots on the map where any pitchers or dispensers will be placed or where bottled water is put out for the meal.**
   - Outdoor
   - Indoor
   - Hallway
   - Classroom

Example of Finished Map:



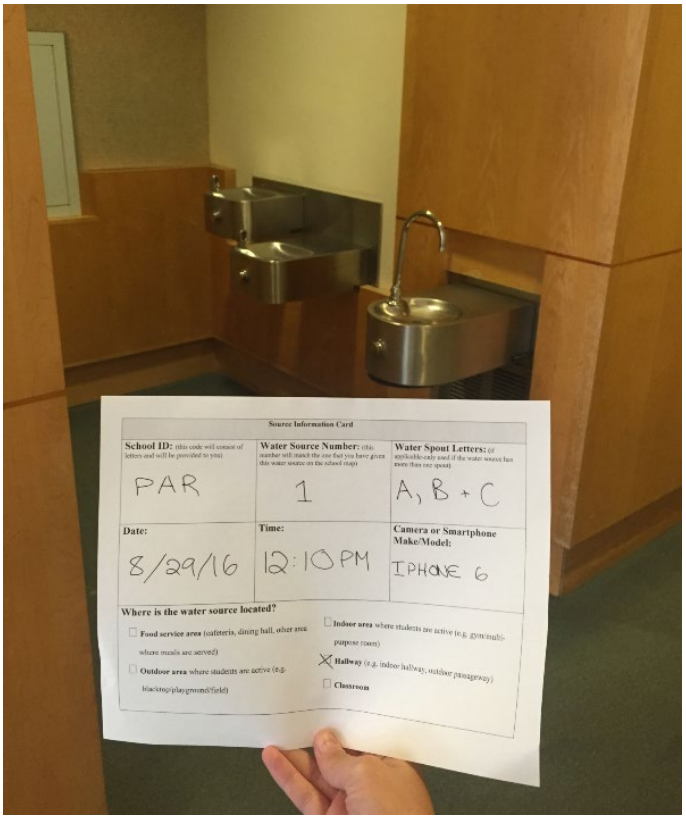
IMPORTANT: Please label the map clearly. The codes on the source information cards and the labels that you will make next (Steps 2, 3, & 4) identify which water source is being photographed and where it is located. The photos themselves and photo type cards document the condition of each water source. Matching the source information cards and labels in the photos with the labeled map assures that you know exactly where your photos were taken.

As an example, knowing that outdoor water sources are consistently broken or dirty would be useful information! This also means that the map needs to be **legible** when it is uploaded. Please write neatly and large enough.

STEP 2

Create source information cards

1. Complete a large 'source information card' for each water source before taking photos of that water source. This includes:
   - **a.** The School ID: an ID for each school will be provided to you by your project leader. It may include letters and/or numbers.
   - **b.** The water source ID number (see step #1.4): the number that you assigned the water source on the school map (1, 2, 3, etc.). Please also write what floor the water source is on (if the school has multiple floors) and a general location description (e.g. 2nd floor, end of hallway near restrooms).
   - **c.** Water spout letters (if applicable): When there is more than one spout/tap on a water source, including bottle fillers, identify each spout with separate letters (A, B, C-it is unlikely that there would be more than 3 but use as many letters as necessary). Include all spout letters on source information card (See example photo to the right), as well as on the map.
   - **d.** Date and time
   - **e.** Type of camera or smartphone



IMPORTANT:

- When there is a set of water fountains next to each other, they are considered the same water source, **reflected by just one number** on the map. The spouts on each fountain will get separate letters and need to be photographed separately. The same rule applies for bottle fillers in fountains (same water source number, separate spout letters and photographs). Each spout letter should be on the map, too. You will also make separate labels for each spout (next step).

STEP 3

Create source ID labels

1. Now create a 'source ID label' for **each spout** with the information from the top row of the source information card.

On a sticky note, or plain paper, write down the school ID (see step 2.1.a) followed by the water source number (see step 2.1.b), and spout letter (see Step 2.1.c), if applicable. You will include this source ID label in **every photo.**

STEP 4

Create photo-type cards

1. Cut out the 'Photo Type' cards. These cards will help identify what each photo documents (e.g., close up of the water source, the water source dispensing water). Photo types include:
   - **a.** Close
   - **b.** Ditance
   - **c.** Dispense
   - **d.** Cups
   - **e.** Dirty
   - **f.** Poster

Include the correct photo type card in every photo. ***See Step 5 for the specific description of how to take each photo type.***

Source ID label

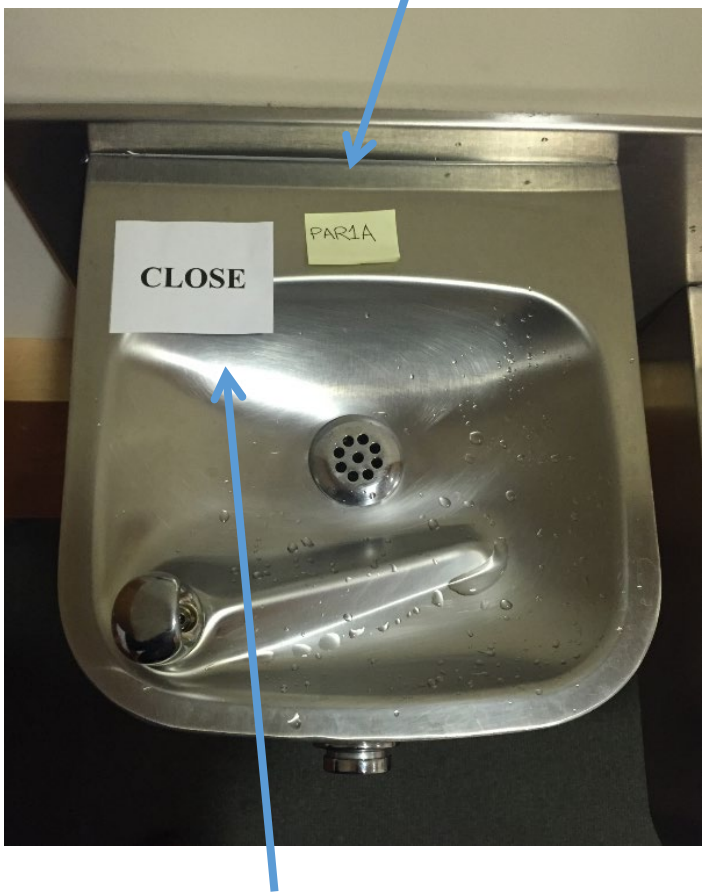


Photo-type card

IMPORTANT:

- Take a "source information" and "distance" photo for each water source. If cups or signage (posters) are present, take a photo for each source. Then take a "close" and "dispense" photo for each spout. Take a "dirty" photo for each spout as necessary.

STEP 5

Take photos

Photo 1: Source Information

1. Take 1 photo of the water source from a distance and include the large source information card from Step 2 in this photo.

Note: This photo only needs the source information card (full sheet of paper) – no other labels needed.

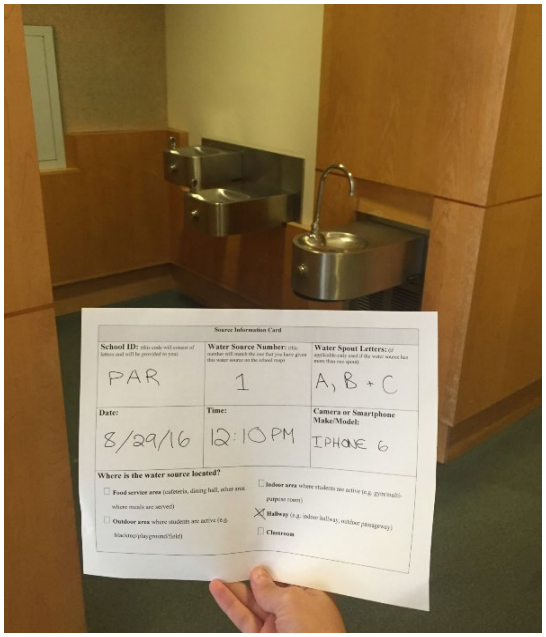


Photo 2: Distance

1. Take 1 photo of the water source *from a distance of 10 feet.* Use tape measure to mark the 10' spot where you will stand to take the photo.
2. **In the photo, we should be able to see:**
   - **a.** the type of water source,
   - **b.** any cups available near the water source,
   - **c.** any obstructions to the water source,
   - **d.** any signage (posters) regarding beverage promotion or healthy living that are hung near the water source.
3. Include the 'distance' photo type card and source label(s) (if there are multiple spouts for this water source, include each source ID label).

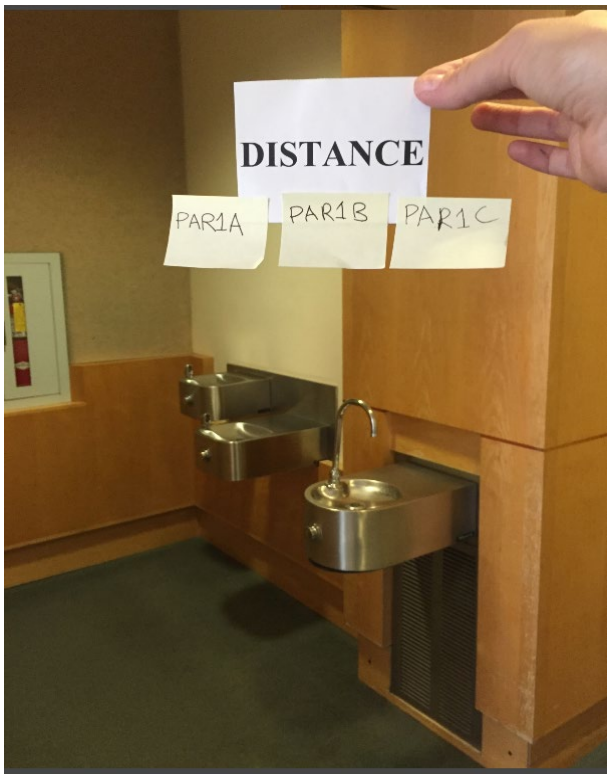


Photo 3: Poster

1. **If there are no posters present, skip this photo.** If there are posters regarding beverage promotion, or healthy living in general, located near the water source, take a close photo of each poster so that text and images are visible.
2. Include the 'Poster' photo type card and source ID label(s) (if there are multiple spouts for this water source, include each source label).

Note: If in doubt about the relevance of the poster to healthy living or beverage consumption, take a photo anyway.

Photo 4: Cups

1. **If there are no cups present, skip this photo.** If cups are available near the water source, take a close-up photo of the cups holding the ruler lengthwise next to the cup showing the height of the cup, and another with the ruler width-wise across the cup to show the width of the cup. Make sure the edge of the ruler matches up with the edge of the cup so that the measurement starts from zero (See sample photo).
2. Include the 'cups' photo type card and source ID label(s) (if there are multiple spouts for this water source, include each source ID label).

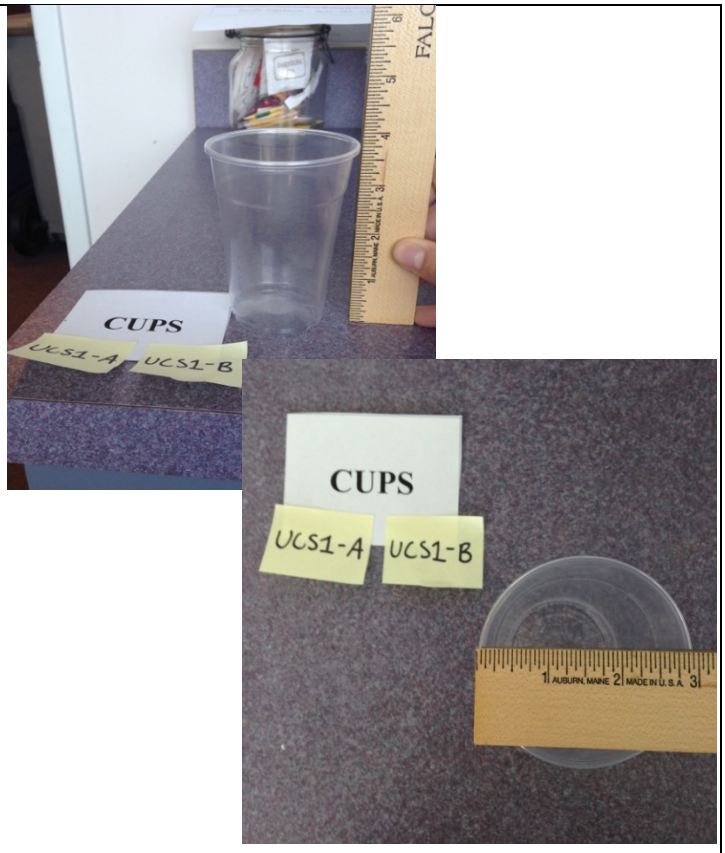


Photo 5: Close

1. **For each spout** (even if there is only one spout), take a photo 18 inches away. In this photo, the cleanliness or dirtiness of the water basin/water spout should be evident.
2. Include the 'close' photo type card and source ID label.

Photo 6: Dirty

Note: types of dirtiness could include leaves, sticks, dirt, sand, other natural debris, bird feces, birds bathing in the fountain, hair, food, gum, trash, rust, mold, clogged or stagnant water, water stains, insects (dead or alive), bodily fluids (blood, spit, vomit, mucous) or cleaning supplies such as a rag. **If the source and spouts are completely clean, these photos are not necessary.**

1. **For each spout** (even if there is only one spout), take photos of any unclean characteristics.
2. **Take as many close-up photos as needed** in order to document any unclean characteristics of the water source. Any unclean characteristics should be clearly visible in the photo(s).
3. Include the 'dirty' photo type card and source ID labels in each photo.

Photo 7: Dispense

1. **For each spout,** (even if there is only one spout) **take a photo where you** completely press or turn the knob to dispense water. In this photo, we should be able to see how high the water arch is (for fountains), or how strong the stream is for other water sources.
2. Include the 'dispense' photo type card and source ID labels.

NOTE:

- **If the water flow is erratic** (fluctuating between high, satisfactory and low within a few seconds), take several photos that demonstrate the different levels of water arch or stream.
- **If the water source is broken, or the jug of bottled water is empty,** and there is no water dispensing, please continue to take a photo of yourself pressing/pulling the button/lever to document that there is no flow. **Always take a 'dispense' photo**, otherwise it might be assumed that you have forgotten to take this photo.
- If the site provides water in individual bottles, a pitcher, or a jug of bottled water, do not take a 'dispense' photo. Instead, take a photo that reveals how full or empty the water supply is.

SUMMARY OF PHOTOS in Step 5

There should be at least four photos taken of each water source. Each of the following is required:

1. Source information (one photo)
2. Distance (one photo)
3. Close (take one photo for each spout)
4. Dispense (take one or more photos for each spout or supply)

If any of the following objects/conditions are present at a water source, photos of these should also be taken:

1. Cups (two photos)
2. Posters (one or more photos)
3. Dirty (one or more photos for each spout)

Example: for a clean, functional, single spout water source with no cups or posters, you will have only 4 photos. Otherwise, take as many photos as you need to document the condition of each water spout as well as presence of cups and/or posters.

IMPORTANT! Check the quality of each photo before proceeding to the next one. Re-take photos as necessary to ensure clarity of the photo and visibility of labels/cards.

STEP 6

Upload map and photos

1. Before you upload your photos, it is important to take the time to name the file/image according to the type of picture it is. For example, "**CUH_1_AB_distance**." Start with the school code, followed by the water source number, spout letter, and type of picture with _ in between each descriptor.
2. Your project leader will set up and provide instructions on accessing a shared drive to store all the photos.
3. Upload the school map and photos in the appropriate folders in your group's shared drive. The folders for each school should be titled with the school name and the same school code as on your source information card. Folders may or may not include division by school district or some other variable as well, depending on your group's project purpose.

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SUMMARY CHECKLIST:

This check-list provides a summary of the protocol steps. Please use this checklist as a reminder while taking photos to ensure you collect all the necessary data. Please refer to the full protocol for additional information.

Get your supplies:

• Smartphone or digital camera – fully charged	
• Black or blue pen	
• Scissors	
• Tape	
• Large 'Source Information' cards	
• Small 'Photo Type' cards	
• Sticky or post-it notes or small pieces of plain paper	
• Measuring tape and standard ruler	

Locate and mark drinking water sources on the school map:

• Every source in the **food service area** (cafeteria, dinnig hall, other area where meals are served)	
• One in an **outdoor area** where students are physically active for PE/recess (e.g. field, blacktop,playground)	
• One in an in**door area** where students are physically active for PE/recess (e.g. gym, multipurpose room, etc)	
• One in **hallway or passing area**	
• One in **classroom**	

Create source information cards, source labels and photo type cards:

• Complete a source information card for each water source (you can complete these individually as you approach each source)	
• Create source labels for each source/spout on sticky notes or plain paper	
• Cut out the photo type cards	

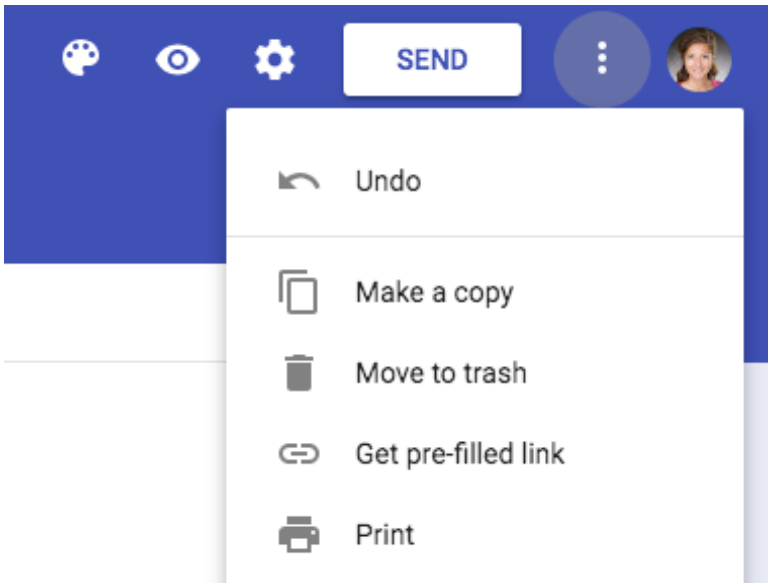
Take photos:

Take photo of water source with **source information card** completely visible	
Take photo of water source from a distance of 10 ft with "**DISTANCE**" label visible in the photo	
Take photo of any cups next to the water source with label "**CUPS**" visible in the photo. Use the ruler to show the cup height and width.	
Take photo of any posters or advertisements about beverages, or healthy living, near water source with label "**POSTER**" visible in the photo	
Take close up photo of each spout of the water source in with label "**CLOSE**" visible in the photo	
Take photo of water source dispensing water with label "**DISPENSE**" visible in photo	
Take photo of any dirt or unclean parts of the water source with the label "**DIRTY**" visible in photo Take photo of each of the following types of dirtiness: **Leaves, sticks, and other natural debris**	
Bird feces	
Birds bathing in/on water source	
Hair	
Trash	
Food or drink	
Grime/dirt	
Gum	
Rust/mold	
Water stains	
Clogged or stagnant water	
Insects (dead or alive)	
Bodily fluids (blood, spit, vomit, mucous)	
Paint	
Chipped paint	
Check quality of all photos and retake as neccessary	

Upload your final set of good quality photos and the school map into cloud service

AQWA Data Entry & Scoring Instructions

1. Open the Data Entry Form link: https://docs.google.com/forms/d/1bAhLq4TRpOptPHj-zsIJ7qap8mtCtCeacw4FTs1PvdI/edit. Make a copy of the Form by clicking the 3 dots on the top right corner of the original form. Select "Make a Copy." A new copy will appear; change the title of the form to the school code. Make a separate copy of the form for each school.



2. **IMPORTANT: do not add any questions to the Data Entry Form or change the text of the response options**. Adding questions will skew the location of form responses in the spreadsheet and the existing formulas will not recognize the correct information. The formulas are also designed to recognize the current response options – changing any response options within the Data Entry Form will also cause the existing formulas to not recognize the correct information. Anyone with the link can edit the Data Entry Form, so you have the ability to edit these things: please be careful not to make accidental changes.

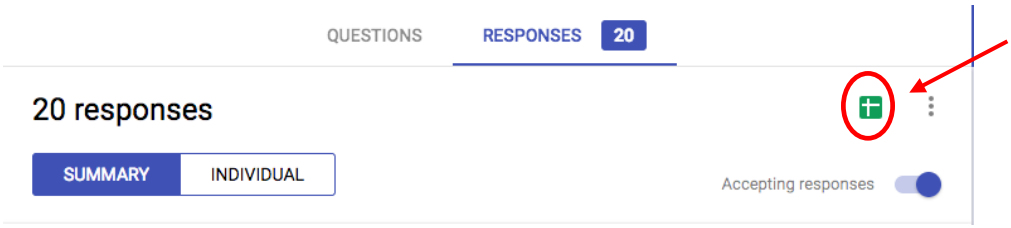
3. Click the Preview icon (eye shape) to view the form and enter responses. The form can also be sent to others for them to record responses by clicking SEND and entering their email addresses.

4. Follow the steps and questions in the form to document each water source and spout. Each water source will be documented once. For water sources that have more than

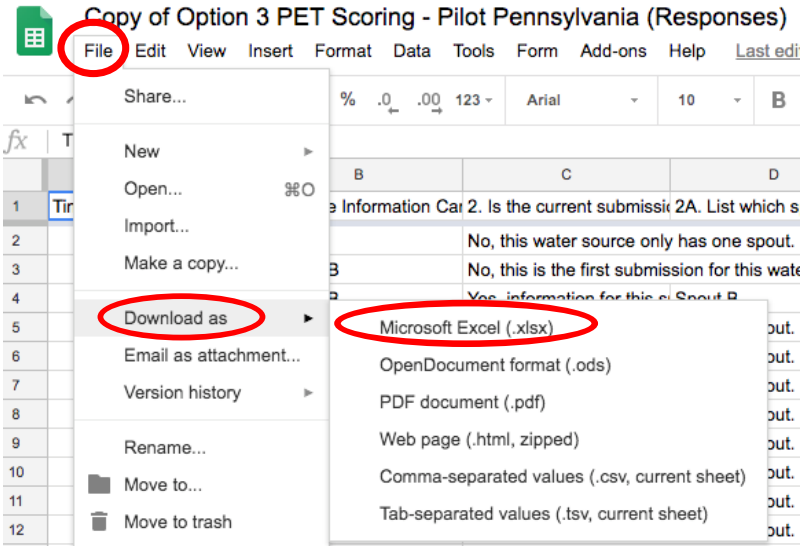
one spout, Spout A will be documented in the initial submission for the water source, along with the overall water source information. To document Spout B, Spout C, etc., you will enter additional forms, but the form is designed so that you don't have to repeat questions that pertain to the water source.

5. Once each of your water sources and spouts have been submitted using the Data Entry Form, click on "Responses." Click on the green Google Sheets icon to export the responses to a Google Sheet. Thus, all your data are now collected into one Google Sheet.

6. Check each response in the Google Sheet to ensure that it is complete. If any are incomplete, go back to the Data Entry Form and re-document that source/spout with complete information. Export the responses again. Be sure to delete the incomplete entry from the Google Sheet before proceeding.



7. Export this Google Sheet as an Excel file by clicking "File" in the upper left-hand corner, hovering over "Download as…" and clicking "Microsoft Excel (.xlsx)." This creates *your* responses workbook, which is separate from our workbook of formulas provided to you.



8. Highlight each of the rows in your responses workbook that have information in them. It is important to only highlight these rows, rather than the entire sheet. Right click, select Copy.

9. Return to the AQWA Scoring Formula Workbook. Click on the "Form Responses 1" tab and place your cursor in cell A1 of the sheet. Right click, select Paste.

   - The formulas in the "Summary Table" tab have been designed to recognize survey responses in certain rows and columns. Pasting your data anywhere other than cell A1 will not allow the formulas to recognize the appropriate information.
   - Once your responses have been pasted into the "Form Responses 1" tab, your summary statistics should automatically fill in the "Summary Table" tab.

10. It is wise to double check that the formulas have populated the cells correctly by manually/visually counting up a few items and making sure the sum in the table matches.

11. Populate the cells in the "Calculated Ounces" tab designated for cup dimensions.
    - Cup height and width need to be manually transferred from the "Form Responses 1" tab to the "Calculated Ounces" tab.

12. Populate the cells in the "Summary Table" tab requiring to be filled manually
    - The cells highlighted red (specified below) need to be filled in by you – these are the only cells in the table that will not be automatically filled in with a formula. You will need to visually/manually tabulate this handful of items in your "Form Responses 1" tab.
        i. If "other" was chosen and filled in for
            1. Water source location (column K in "Form Responses 1")
            2. Objects obstructing water source (column M)
            3. Type of spout being documented (shows up in two spots – column E and column X)
            4. Unclean characteristics present at a given spout (shows up in two spots – column G and column Z)

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