charity: water MAP Framework Protocol

for charity: water grants beginning Jan 2020 or later

This document describes the standard data collection protocol for the monitoring and evaluation of charity: water funded water, sanitation, and hygiene programs - known as the MAP Framework. Please note that each partner organization will work with charity: water to develop a protocol that is most appropriate for a specific country program.

GENERAL PROTOCOL

There are three distinct data collection types that comprise the charity: water MAP Framework:

- **Major Review** – a comprehensive before-and-after evaluation of charity: water grants
- **Annual Check-in** – a simpler data collection at the endline of a charity: water grant
- **Post Implementation Monitoring (PIM)** – a comprehensive assessment of past charity: water funded work

These are introduced below. Detailed data collection protocols are then described for each data collection type on the following pages.

Major Review

The Major Review is a comprehensive before-and-after evaluation of a funded country program's water, sanitation and hygiene (WASH) grant activities. This evaluation includes data collection at a sample of communities, water points, and households. Both surveys and water quality testing are conducted. The Major Review is completed one time per country program, typically in a partner's second year of working with charity: water. The evaluation compares two areas: a "baseline" of the second grant's work, collected prior to the start of implementation activities, and an "endline" of the first grant's work, collected approximately 6 months after the completion of the construction activities (ranging from 4-8 months).

If the country program changes areas to a very different geographic region within the country, it may be necessary to conduct this Major Review as part of the first grant in that new program area. This determination will be made by charity: water in collaboration with the partner organization at the time of the grant proposal.

Annual Check-in

In years that the partner is not undergoing a Major Review or PIM evaluation, data is collected through household surveys after the completion of a grant. A sample of households are surveyed approximately 6 months after completion of the grant construction activities. No water quality testing is conducted as part of the Annual Check-in.

Post-Implementation Monitoring (PIM)

For country programs with several completed charity: water grants, data is collected at a representative sample of past projects within the country. This Post-Implementation Monitoring data collection occurs every three years with a random sample of projects selected from all charity: water funded projects between 1-10 years old. Data is collected at communities, water points, households, and schools, and includes both surveys and water quality testing.

DETAILED PROTOCOL

SAMPLING FRAME AND SAMPLE SIZE

The primary unit of data collection is the community in which the water project was or will be constructed. This community will be defined by the partner implementing organization, according to the administrative unit that is used by the local government or partner organization.

The methodologies for community, water point, household, and school selection for each data collection type are described below. charity: water's M&E team will assist with sample size calculations and community selection.

Major Review

- **Community selection**
  - The community sampling frame for the Major Review will include all communities served by the charity: water grant(s) being evaluated.
    - If any communities benefited from program activities in both the first and second grants (and would therefore be eligible for selection for both the baseline and endline groups), these will be excluded from the selection.
  - Data will be collected in 30 communities in the baseline group, and 30 communities in the endline group.
  - Communities will typically be selected by simple random sampling.

- **Water point selection** will differ between the baseline and endline communities.
  - At baseline:
    - Data will be collected at all shared water points that have been used for drinking water by the community within the previous 12 months (whether functional or nonfunctional, improved or unimproved), up to a maximum of 5 water points per community.
    - If there are more than 5 water points in the community, enumerators should visit 5 water points said to be most-often used (according to community leaders).
    - If there are many shared water points and it is difficult to know which are most-used (for example, a piped system with many tap stands), water points should be chosen by simple random sampling.
    - If community members typically collect water from a neighboring community's water point, it should be surveyed if possible. If not possible, enumerators will record this within the community survey.
  - At endline:
    - Data will be collected at only the charity: water funded water point(s) in the community.
      - For point sources like hand pumps or spring protections, all charity: water funded water points will be surveyed.
      - For piped systems with several public tap stands per community, up to four tap stands per community will be surveyed. These will be selected by simple random sampling.

- For piped systems with in-home connections, four household taps will be surveyed per community. At four households within the community (selected by simple random sampling), the respondent will be asked to respond to the water point survey in addition to the household survey.
- For piped systems with a combination of public and private in-home connections, the sampling methodology will be determined by charity: water with the partner organization, depending on the primary focus of the program.

- **Household selection**
  - At baseline, the household sampling frame will be all households in the community which have the potential to be served by the proposed water point. At endline, the household sampling frame should be households that are intended daily users of the charity: water-funded water point.
  - Six households will be randomly selected by simple random sampling, unless there are greater than 300 households in the community. In this case, the community list may be divided into equal sections, and one section randomly selected to be the sampling frame. Households will then be randomly selected from that one section.
  - Households will be randomly selected through one of three methods:
    1. From a list of households provided in advance by the partner or the community leaders.
    2. By making a list of all households while in the community (with the help of a community leader) and selecting with a random number generator.
    3. Only if the first two options are not possible, selection may be done by approximating random household selection in the field. This is done by spinning a bottle on the ground to indicate direction, and skipping a pre-determined number of houses.

- **School selection**
  - For the Major Review, data will not be collected at schools.

Annual Check-in

For detailed information, refer to the "Annual Check-in Survey Requirements and Guidance" document.

- **Community selection**
  - The community sampling frame for the Annual Check-in will include all communities served by the charity: water grant.
  - Communities will be selected by simple random sampling.
  - Data will be collected from households in 20 communities at endline.
  - For the Annual Check-in, data will not be collected at the community level.
- **Water point selection**
  - For the Annual Check-in, data will not be collected at water points.
- **Household selection**
  - The household sampling frame will include all households that are intended daily users of the charity: water-funded water point(s) in selected communities.
  - Ten households will be randomly selected from each community, for a total of 200 household surveys.
- **School selection**
  - For the Annual Check-in, data will not be collected at schools.

Post-Implementation Monitoring

- **Community selection**
  - The community sampling frame will include all communities served by charity: water-funded water points constructed in the prior 1-10 years.
  - The sample size for communities will be calculated by charity: water based on the ability to measure a proportion metric with a 95% confidence interval, 80% power, 10% precision, and accounting for clustering of projects within geographic area and technology type.
  - The typical number of communities visited will be 80-100 per data collection cycle; however, sample sizes will be larger in country programs with many projects over distinct geographic areas.
  - Communities will be selected by either simple random sampling or by probability proportional to size sampling based on the estimated population served in each community.

- **Water point selection** will occur within selected communities according to technology type. Surveys should be conducted at selected water points, even if they are non-functional.
  - Point Sources (such as hand pumps or spring protections): Data will be collected at the one indicated charity: water-funded water point within the selected communities.
  - Piped systems with public taps: In communities with piped systems, data will be collected at four charity: water-funded tap stands per community, selected by simple random sampling. If fewer than four tap stands exit, data will be collected at all available tap stands.
  - For piped systems with in-home connections, four household taps will be surveyed per community. At four households within the community (selected by simple random sampling), the respondent will be asked to respond to the water point survey in addition to the household survey.
  - For piped systems with a combination of public and private in-home connections, the sampling methodology will be determined by charity: water with the partner organization, depending on the primary focus of the program.

- **Household selection**
  - The household sampling frame will include all households that are intended daily users of the charity: water-funded water point(s) in selected communities.
  - Six households will be randomly selected by simple random sampling, unless there are greater than 300 households in the community. In this case, the community list may be divided into equal sections, and one section randomly selected to be the sampling frame. Households will then be randomly selected from that one section.
  - Households will be randomly selected through one of three methods:
    1. From a list of households provided in advance by the partner or the community leaders.
    2. By making a list of all households while in the community (with the help of a community leader) and selecting with a random number generator.
    3. Only if the first two options are not possible, selection may be done by approximating random household selection in the field. This is done by spinning a bottle on the ground to indicate direction, and skipping a pre-determined number of houses.

- **School selection**
  - The school sampling frame will include all schools served by charity: water-funded WASH facilities constructed by the country program in the prior 1-10 years.
  - Fifteen schools will be randomly selected using simple random sampling. If fewer than fifteen have been completed, data will be collected at all those available.
  - At each school, two surveys will be completed:
    - A school survey, completed at the school
    - A water point survey, completed at the water point funded by charity: water and located at the school (even if it is not functional).

DATA COLLECTION INSTRUMENTS

Quantitative data will be collected through two primary means: surveys and water quality testing.

SURVEYS

Survey data will be collected by trained survey enumerators who orally administer questionnaires to respondents at the following data collection levels: communities, water points, households, and schools. All surveys will be administered to adult respondents over the age of 18. Community surveys and water point surveys will be administered to a water committee member or a community leader. Household surveys will be administered to heads of household (preferably female) who have provided informed consent. School surveys will be administered to a school teacher or administrator (e.g. principal, headmaster).

charity: water will provide survey questions in English, and the partner organization will translate them into the appropriate local language(s).

All survey data will be collected with mobile data collection software mWater on Android phones or tablets.

WATER QUALITY TESTING

Sampling

Water quality testing will occur at water points and/or households, depending on the data collection type. Testing will be done for fecal indicator bacteria (*E. coli* or other). The sampling methodologies are described below by data collection type.

Major Review

For the Major Review, water quality testing will be performed at two levels: at the water point and at the household level.

- At all surveyed water points, samples will be drawn in the manner that community members draw water.
- At households, respondents will be asked for a cup of drinking water from their household as they would drink it. Samples from a minimum of four households in each community will be collected.

Annual Check-in

- For the Annual Check-in, water quality testing will not be conducted.

Post-Implementation Monitoring

- At all surveyed water points, samples will be drawn in the manner that community members draw water.
- Household water quality testing is not required for PIM data collection, but partners may elect to include this testing, if desired.

Quality control: field blank samples

Blank samples will be collected in the field and processed alongside samples at a ratio of approximately 10% of samples. Blank samples will be taken from packaged water from a reputable local brand, and processed for *E. coli* concentration using identical methods to the other samples.

Water quality test methods

charity: water recommends that water quality testing be performed with field test kits either by survey enumerators, or in combination with a water quality test officer or technician, who would perform testing on site or at a central field office location. Samples may also be collected by enumerators and processed by a central laboratory. If laboratory testing is done, samples must be collected, stored on ice, and processed within 8 hours of collection.

The partner organization will make the determination of the test methods used along with charity: water.

Fecal indicator bacteria (E. coli)

E. coli should be measured by a quantitative or semi-quantitative test method, such as the most probable number (MPN) method with the Compartment Bag Test kit (Aquagenx, LLC) or similar. With the compartment bag test kit method, samples will be collected, labeled with a bar code sticker, and processed on site. Alternatively, they may be transported in coolers on ice, and processed within 8 hours at a central location by a water quality technician. Samples must be incubated according to manufacturer instructions - either at ambient temperatures in a closed container (if average ambient temperatures remain >25°C), or in a portable incubator at 35°C for 24 hours. Results are read after incubation.

Thermotolerant coliforms (TTC) may be tested in place of *E. coli*. Additionally, if other test methods are used, results should allow for grouping into quantitative risk categories of <1 MPN/100 mL, 1-10 MPN/100 mL, 11-100 MPN/100 mL, and >100 MPN/100 mL.

DATA QUALITY CONTROL, CLEANING, AND ANALYSIS

Data quality control

Throughout data collection, charity: water will download data from the mobile collection software and perform a quality assurance/quality control (QA/QC) check on the previous week's data. Any issues will be communicated to the partner and/or supervisor(s), and enumerators will be re-trained as needed, according to the observed issues. All identified data input issues will be logged on a second data cleaning tracking template.

The frequency of this check will initially be weekly, but may be reduced to every 2 or 3 weeks after initial reviews, and depending on the total length of data collection.

Data cleaning

Data cleaning will be performed by charity: water with input from the partner supervisor or data manager by email communication.

Data analysis

Survey data and water quality data will be analyzed by charity: water. Monitoring indicators will be calculated, and regression analysis may be conducted to explore factors associated with water quality, water point functionality, or other key results related to the indicators. Reports on analyzed data will be shared with the partner implementing organization.