**Citizen Science QAPP Template #1**

**Title and Signature Page**

**{Title of Your Project}**

{Your Organization}

**Effective Date of Plan: {date}**

*Project Manager:*

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*Signature/Date*

*Name/Title*

*Project QA Manager:*

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*Signature/Date*

*Name/Title*

Add additional signatures lines as needed. At a minimum, include the personnel listed above.

|  |  |  |
| --- | --- | --- |
| **Table of Contents** | | |
|  | | |
| Template #1 | Title and Approval Page | Page 1 |
|  | Table of Contents | Page 2 (this page) |
| Template #2A | Organization Chart | Page 3 |
| Template #2B | Project Distribution List | Page 4 |
| Template #3 | Project/Task Organization | Page 5 |
| Template #4 | Problem Definition and Project Objectives | Page 6 |
| Template #5 | Background and History | Page 8 |
| Template #6 | Project Location | Page 9 |
| Template #7 | Project Schedule | Page 10 |
| Template #8 | Existing Data | Page 11 |
| Template #9 | Quality Objectives | Page 12 |
| Template #10A | Data Collection Methods, | Page 15 |
| Template #10B | Equipment List/Calibration | Page 20 |
| Template #11 | Analytical Methods | Page 21 |
| Template #12 | Field Data Sheet | Page 22 |
| Template #13 | Training and Specialized Experience | Page 23 |
| Template #14 | Assessments and Oversight | Page 24 |
| Template #15 | Data Management | Page 25 |
| Template #16 | Data Review and Usability Determination | Page 26 |
| Template #17 | Reporting | Page 28 |

**{Just ensure that the page numbers listed here match your actual page numbers}**

**List of Appendices**

Appendix 1: Guidance Document for Citizen Science Pathogen Monitoring of Enterococcus Using IDEXX Enterolert with Quanti-Tray ® 2000

Appendix 2: Guidance Document for Citizen Science Pathogen Monitoring of Total Coliforms and

E. coli Using IDEXX Colilert with QuantiTray ® 2000

Appendix 3: Field Sampling and Chain of Custody Datasheet

Appendix 4: Field Instrument Calibration Sheet

Appendix 5: Laboratory Datasheet

Appendix 6: EPA Region 2 Citizen Science Equipment Loan Program Monthly Report Form

**Citizen Science QAPP Template #2A**

**Project Organization Chart**

The organization chart shows the lines of communication and reporting for the project, similar to a chain of command. Fill in the names of the individuals and their titles (where applicable). If the project does not have all of the personnel in the chart, put N/A in the box where this applies. If necessary, add more boxes to accurately reflect the communication and reporting structure of the project.

Project Manager

{name}

Project/Field Personnel

Project Quality Assurance Manager

{name}

Lab Personnel

{name or group}

{name or group}

{name or group}

Example: students

{name or group}

**Citizen Science QAPP Template #2B**

**Project Distribution List**

The distribution list ensures everyone involved with the project receives a copy of the QAPP and is aware/clear about the work being conducted. It also provides the contact information for those involved with the project. For this table, input the names and contact information for all individuals who will need to get a copy of the QAPP.

|  |  |
| --- | --- |
| **Name/Title** | **Contact Information** |
| {name}  Project Manager | Email: [{email](mailto:brooke.trout@state.gov) address}  Phone: {phone number} |
| {name}  Project Quality Assurance Manager | Email: [{email](mailto:brooke.trout@state.gov) address}  Phone: {phone number} |
| {name or group}  Field Samplers | Email: [{email](mailto:brooke.trout@state.gov) address}  Phone: {phone number} |
| {name}  Data Analysts | Email: [{email](mailto:brooke.trout@state.gov) address}  Phone: {phone number} |
| Rachael Graham  EPA Region 2 Citizen Science Coordinator | Email: [graham.rachael@epa.gov](mailto:graham.rachael@epa.gov)  Phone: 732-321-4438 |

**Citizen Science QAPP Template #3**

**Project/Task Organization**

Fill in the name, title, organization affiliation and responsibilities sections of the table below. For the responsibilities section, state what work/task each individual will be doing throughout the project. The responsibilities section provides an outline of the work that will be done for the project. **NOTE**: The names and titles should be consistent in Templates #1, #2A, #2B, and #3.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Title** | **Organizational Affiliation** | **Responsibilities**  **(specific to this project)** |
| {name} | Project Manager | {organization} | Oversees quality assurance manager, data collection, team organization and training, etc. |
| {name} | Project Quality Assurance Manager | {organization} | Quality assurance, oversight and assessments, data verification, evaluation and usability, ensuring corrective actions are completed, etc. |
| {name or group} | Field Personnel | {group/organization} | Field sampling and data analysis |
| {name or group} | Laboratory Personnel | {group/lab/organization} | Sample analysis and data validation |
| Rachael Graham | EPA Region 2 Citizen Science Coordinator | EPA | Coordinate with {organization}’s project manager throughout project; coordinate equipment loan and training with EPA equipment managers |

**Citizen Science QAPP Template #4**

**Problem Definition and Project Objectives**

**Problem Definition**

{Clearly state the problem and environmental questions being addressed by the project.

Here is an example:

*Over the past two years fisherman have noticed a decrease in the clarity of the water and an increase in algae (chlorophyll a) in the Twisting River. Each year the town of Twisting River hosts an annual Rainbow Snouted Brook Trout competition that draws anglers from all over the world. Participants have noticed a decrease in the number and size of fish being caught. The fishermen of Twisting River noticed this decline after the Hot Pink Purple Spotted Hippo power generation plant started discharging water into the Twisting River. This project will address the following questions:*

1. *Is the discharge water from the power plant potentially causing the excessive growth of algae (chlorophyll a) in the Rainbow Snouted Brook Trout’s habitat?*
2. *Is the discharge water potentially impacting the temperature of the Rainbow Snouted Brook Trout’s habitat?*
3. *Are there differences in the water temperature and algae (chlorophyll a) concentrations upstream and downstream of the power plant?*}

**Project Objectives**

{List the project objectives, which link how data results plan to be used for possible actions. Describe how these objectives will answer the problem presented in the problem definition provided above. Include the tasks that will be completed to provide or collect information to address the problem.

Here is an example:

*We plan on investigating the effects of water temperature on algal growth in the Twisting River.*

* *Objective 1: Collect water temperature data upstream of the discharge, at the discharge, and downstream of the discharge*
* *Objective 2: Collect water samples to analyze the amount of algal growth upstream of the discharge, at the discharge, and downstream of the discharge*

*We will sample water for algae (chlorophyll a) from a series of sampling locations in the river that the power generation plant is discharging to. The temperature of the river water will be determined in the field using a YSI meter. We will complete a correlation analysis comparing the temperature of the river and the concentration of algae (chlorophyll a).*}

**Data Users**

{State who will use the data and what decisions/conclusions will be made based on the data. If the data will be compared to any action levels or standards, include them here.

Here is an example:

*The data collected from this project will be used by XYZ University and State Department of Environmental Protection as screening level data. XYZ University will determine if a more extensive project needs to be completed to more definitively determine if there are significant changes in temperature and algae (chlorophyll a) concentration in the river. The data will also be used to inform the State Department of Environmental Protection of a potential problem in the river in hopes that the state will review the power plant’s permit limits and re-evaluate the limits when the plant’s permit is up for review at the end of this year.*}

**Citizen Science QAPP Template #5**

**Background and History**

**Background**

{In this section, state why this work needs to be done, identifying the reasons for conducting the work and/or the lack of information that has been collected previously relating to the project.}

**History**

{In this section provide any relevant historical information that would help the reader understand the problem that is being addressed. If there has been any previous work or data that has been collected as they relate to this project, include them here.}

**Citizen Science QAPP Template #6**

**Project Location**

**Project Location**

{Provide a description of the site and sampling locations. Provide how and why sampling locations were chosen and what is going to be sampled. Describe any temporal (changes in/over time, e.g. seasonal changes) or spatial (geographical location) variations.

Provide a map showing the location(s). Tie this information back to the goals and objectives of the project.}

**Citizen Science QAPP Template #7**

**Project Schedule**

In the table below, list all major project activities that will be performed during the course of the project. Provide estimates of the timeframe expected for the activities to be conducted and/or completed. If the project does not have all of the activities in the chart, delete the row. If necessary, add more rows to accurately reflect the project activities.

| **Activities** | **Organization/Group responsible for activity completion** | **Timeframe work will be done** |
| --- | --- | --- |
| Preparation of QAPP | {name}  Project Manager | {date} |
| Review of QAPP | {name}  Project Quality Assurance Manager | {date} |
| Submittal of QAPP | {name}  Project Manager | {date} |
| Field and Laboratory Instrument Training | EPA Region 2 & {name or group} | {date} |
| Procurement of Equipment | EPA Region 2 & {name or group} | {date} |
| Training of Field Volunteers  (if applicable) | {name or group} | {date} |
| Sample Collection | {name or group}  {name or group}  {name or group} | {date range} |
| Sample Analysis | {name or group} | {date range} |
| Data Evaluation | {name or group} | {date range} |
| Submission of Monthly and Final Reports | {name}  Project Manager | Monthly: {date range}  Final: {date} |

**Citizen Science QAPP Template #8**

**Existing Data**

For many projects it may be necessary to use data that someone else has already collected, (i.e. existing data). Just because data was collected by a reliable source, such as a peer reviewed journal article, doesn’t mean it was collected in a way that your project could use. It is important to perform a check on the data to see how the data was collected and if it is acceptable for the objectives of your project. You must complete this template if your project will be using existing data.

|  |  |  |  |
| --- | --- | --- | --- |
| **Existing Data** | **Data Source** | **How Data Will Be Used** | **Acceptance Criteria** |
| {State what existing data you will use} | {state where that data will come from} | {state the need for this data and/or what purpose it will be used for} | {state what the requirements are for the data in order for them to be used in the project. For example, if you are looking for temperature data for a water body collected in July, then temperature data collected in June would not be acceptable for the project. Data collected with a certain instrument or by a certain method are also instances where the collected data may not be acceptable for the project} |

{or if no existing data will be used, type “No existing data will be used for this project.”}

**Citizen Science QAPP Template #9**

**Quality Objectives**

Use this template to develop the data quality objectives (DQOs) that define the type, quantity and quality of data needed to answer specific environmental questions, and support proper environmental decisions. The examples provided below are neither inclusive nor appropriate for all projects. Fill in all information appropriate for the project. Complete this template for field, existing data and laboratory activities, if your project includes these components.

**Precision: {delete the field parameters or analyses you will not be collecting or analyzing}**

**{add any other precision measurements not represented}**

Field – A duplicate YSI profile will be taken at one sampling location during each sampling event. For each sampling event, the duplicate YSI profile will be taken at a different sampling location. For example, the Week 1 sampling event duplicate YSI profile will be taken at sampling location A and the Week 2 sampling event duplicate YSI profile will be taken at sampling location D. The readings must agree with the following:

* Temperature: within ±0.1ºC
* Salinity: within ±1.0 0/00 (part per thousand)
* pH: within ±0.2 s/u
* Conductivity: within ±500 µS/cm
* Dissolved Oxygen: ±0.5 mg/L

GPS units are accurate to within ±15 meters.

Laboratory – A laboratory fortified blank sample will be performed with every batch (every 20 samples).

* Enterolert for *Enterococcus*: The laboratory fortified blank is prepared with 99 mL sterile deionized water, one packet IDEXX reagent and one *Enterococcus fecalis* QC pellet. The laboratory fortified blanks should produce fluorescing wells. If there are no fluorescing wells, sample data for the week are invalid unless sound reasoning is documented. The true value provided by the manufacturer for the *Enterococcus faecalis* QC pellet will be used to calculate the % Recovery. The % Recovery will be expected to meet 50 – 200% of the true value. If this number is found to be outside the interval, laboratory procedures will be evaluated.
* Colilert-18 for Total Coliforms: The laboratory fortified blank is prepared with 99 mL sterile deionized water, one packet IDEXX reagent and one *Enterobacter aerogenes* QC pellet. The laboratory fortified blanks should produce positive observations for total coliforms, but not for the presence of *E.coli*. If there are no fluorescing wells, sample data for the week are invalid unless sound reasoning is documented. The true value provided by the manufacturer for the *Enterobacter aerogenes* QC pellet will be used to calculate the % Recovery. The % Recovery will be expected to meet 50 – 200% of the true value. If this number is found to be outside the interval, laboratory procedures will be evaluated.
* Colilert-18 for *E.coli*: The laboratory fortified blank is prepared with 99 mL sterile deionized water, one packet IDEXX reagent and one *Enterobacter aerogenes* QC pellet for total coliform or one *Escherichia coli* QC pellet for *E. coli*. The laboratory fortified blanks should produce fluorescing wells. If there are no fluorescing wells, sample data for the week are invalid unless sound reasoning is documented. The true value provided by the manufacturer for the *Enterococcus faecalis* QC pellet will be used to calculate the % Recovery. The % Recovery will be expected to meet 50 – 200% of the true value. If this number is found to be outside the interval, laboratory procedures will be evaluated.

**Bias** is defined as any influence in the project that might sway or skew the data in a particular direction. Taking samples from one location where a problem is known to exist, instead of taking samples evenly distributed over a wide area, is one example of how data can be biased. State any biases that could potentially exist and how they will be addressed in the project.

**Bias: {add any other known bias not represented}**

**{or if your sampling approach is unbiased, please state this here and why}**

Field – This project sampling design is a judgmental design and considered a biased sampling approach. The sampling locations for the project have been selected due to known influences or previous data suggesting influences to a particular area of the waterbody. There will also be a seasonal influence on the data since sampling will occur June through October. The seasonal variations in temperature and rainfall are known to influence bacteria numbers.

**Representativeness** is how well the collected data depicts the true system. Describe how the collected data will accurately represent the population, place, time and/or situation of interest.

**Representativeness: {add any other comments on the representativeness of this project}**

Field – All sampling locations are known to be in {name the waterbodies and types of water (brackish/fresh/etc) you will be sampling in} where pathogen indicator levels are {CHOOSE ONE: (a) known or suspected to be elevated; (b) not known or suspected to be elevated; OR (c) unknown}.

**Comparability** is defined as the extent to which data from one data set can be compared directly to another data set. The data sets should have enough common ground, equivalence or similarity to permit a meaningful analysis. State if the data is intended to be compared to other data sets and how this will be achieved.

**Comparability: {add any other comparisons for the this project}**

Field – The same make and model of YSI units will be used by each team during the training and for field sampling for the duration of the project. Standard units will be applied when recording data from the GPS and YSI (see table in Sensitivity section). GPS data will be recorded in DD.MMSSSS format. The field samplers will also use standard water sample collection methods which are described under Template #10A.

Laboratory – If possible, reagents and materials that will be used for the {Enterolert and/or Colilert-18} analyses will be from the same lot and vendor. Also the {Enterolert and/or Colilert-18} Method is a standardized method.

**Completeness** is the amount of data that must be collected in order to achieve the goals and objectives stated for the project. State how much data will need to be collected in order for the project to be considered successful. This can be stated as a total number of samples or a percentage of data collected.

**Completeness: {add any other comments on the completeness of this project}**

Field & Laboratory – The goal is to collect 100% of the planned number of samples; however, 90% would be acceptable for the purposes of the project. If weather or other issues impede a sampling event, the event will be rescheduled.

**Sensitivity** is essentially the lowest detection limit of a method, instrument or process for each of the measurement parameters of interest. State the sensitivity needed for the instruments, methods or processes used for the project in order to obtain meaningful data.

**Sensitivity:**

Field – See table below for YSI and GPS sensitivity criteria.

Laboratory – The detection limit for samples will be 0 Most Probable Number per 100 mLs of sample (MPN/100 mL).

|  |  |  |
| --- | --- | --- |
| **Instrument** | **Range** | **Sensitivity** |
| ***YSI ProPlus MPS*** |  |  |
| Temperature | -5 to 45ºC ± 0.15ºC | 0.1ºC |
| Salinity | 0 to 70 0/00 ± 0.1 0/00 | 0.01 0/00 |
| Conductivity | 0 to 200 mS/cm ± 0.001 mS/cm | 0.001 to 0.1 mS/cm |
| DO | 0 to 50 mg/L ± 0.2 mg/L | 0.01 mg/L |
| pH | 0 to 14 units ± 0.2 units | 0.01 units |
| **Garmin Montana 650T GPS** | --- | ±15 meters |

\* Note: Range and Sensitivity provided in the above table are manufacturer specified ranges.

**Citizen Science QAPP Template #10A**

**Data Collection Methods**

**Sampling Design**

For this section, describe and justify the data collection activities. Include location specific information, such as GPS coordinates or landmarks, for the data collection locations. Provide information about the frequency of sampling and the collection of quality control samples. Include information about your plans for sample identification and transportation.

**Sampling Schedule {edit however you need, below is just an example – It may also be helpful to tabulate this information if the sampling is to occur over several months }**

Sampling will occur from {month} to {month} 2018. There will be {#} sampling events in a month. Sampling will occur {#} times in one week. Sampling will occur on the same day each week. Change if neccessary {#} sample(s) will be collected per sampling location.

**Sampling Locations {fill in the appropriate section below and/or edit however you need; below are examples}**

*{If sampling locations already determined:}* There will be {#} sampling locations for this project. GPS coordinates for each of the sampling locations are listed below:

* {list GPS locations here}

Handheld GPS units will be provided by EPA and used to find/identify the sampling locations. GPS coordinate readings will be taken each time the sampling team arrives at the sampling location.

*{If sampling locations are NOT determined as of QAPP writing}:* The number of sampling locations will be determined by {organization} and submitted as an attachment or addendum to this QAPP. GPS coordinates will be included in the attachment or addendum for each sampling location. Handheld GPS units will be provided by EPA and used to find/identify the sampling locations. GPS coordinate readings will be taken each time the sampling team arrives at the sampling location.

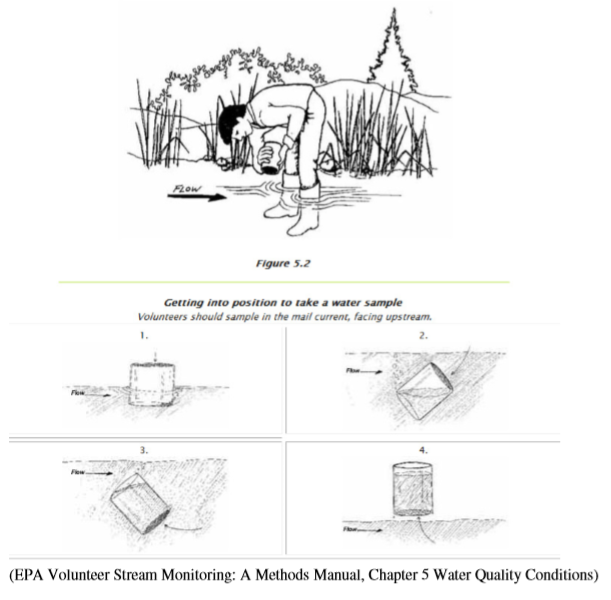
**Sampling Methodology {edit however you need – include all applicable sampling types for all bodies of water & remove unnecessary sampling types}**

Appropriate Personal Protective Equipment (PPE) must be worn when sampling. It is {organization}’s responsibility to determine what safety measures and PPE are adequate overall and for each sampling location, as established in the safety plan. When the samplers arrive on location they will fill out the data sheets, label the sample bottles and then measure the water quality parameters. Water quality parameters will be collected using the YSI ProPlus Multi Parameter Sonde (MPS). Temperature, salinity/ conductivity, DO, and pH parameters will be measured at each location. In general, sample away from the stream bank in the main current to avoid sampling in stagnant water. Water quality measurements will be taken, ideally between 0.5 to 1 meter below the surface of the water with the sample collector positioned downstream of the YSI to avoid the dispersion of sediments, etc into the water column. A duplicate set of readings will be collected once per sampling event. The duplicate readings shall be taken at a different sampling location for each sampling event as described in Template #9.

Water samples will then be collected using one of the following methodology. Samples will be collected into sterilized {#} ml HDPE plastic bottles or {#} mL sterile WhirlPaks. Care must be taken not to touch the cap or the inside of the bottle to avoid contamination. Care must also be taken not to disturb the waterbody substrate.

Method:

1. Label the bottle with the information provided in the Sample Labeling, Custody and Transport Section below.
2. Don the appropriate PPE. A new pair of gloves must be used at each sampling location.
3. *Wading:* (See Figure 5.2 below) Wade in until you reach the appropriate depth for sampling (i.e., at minimum knee depth). Try to disturb as little bottom sediment as possible. In any case, be careful not to collect water that has sediment from bottom disturbance. Stand facing upstream. Collect the water sample on your upstream side, in front of you. With the collector’s arms extended to the front, hold the container (cap still on) near its base and downward at a 45-degree angle under the water. Remove the cap while under water and fill the container in one slow sweeping motion in the upstream direction. The mouth of the container should be kept ahead of the collector’s hand and the container recapped while it is still submerged.
4. *Boat:* Carefully reach over the side and collect the water sample on the upstream side of the boat. With the collector’s arms extended to the front, hold the container (cap still on) near its base and downward at a 45-degree angle under the water. Remove the cap while under water and fill the container in one slow sweeping motion in the upstream direction. The mouth of the container should be kept ahead of the collector’s hand and the container recapped while it is still submerged.
5. *Extension pole:* You may also tape your bottle to an extension pole to sample from a bridge or in other situations where the minimum sampling depth cannot be reached. In this case, while wearing a new pair of gloves, secure a capped sampling bottle to the pole, remove the cap just before sampling, and avoid touching the inside of the bottle or the cap. Plunge the pole and sampling bottle (opening upward) into the water. Replace the cap immediately after sampling, remove the bottle from the pole.
6. Note that all samples from a given location should be taken in the same manner throughout the sampling season and noted in the addendum (i.e., wading, from a boat, or using an extension pole).
7. If possible, leave a 1-inch air space or fill to the shoulder of the bottle. Do not fill the bottle completely to the top so that the sample can be shaken just before analysis.
8. Fill in the bottle number and/or site number on the appropriate field data sheet. This is important because it tells the lab coordinator which bottle goes with which sampling location.
9. Seal the samples in a plastic bag and place samples in the cooler on ice for transport to the lab/office.



**Sample Labeling, Custody and Transport {edit however you need – below is an example}**

Samples will be labeled using the following format:

* Project Name
* Sampling Location ID
* Sampling Date
* Sampling Time
* Analysis: Enterolert/Colilert-18
* Preservation: Ice

The Station ID will have the following format:

Organization Designation – Sampling Location – Month Day Year

The station number must be 2 digits and the month, day and year will also each be 2 digits.

Ex. HC-01-062318: This sample was collected in Heady Creek at location 1 on June 23, 2018.

Samples will be transported to the laboratory/office immediately after the sampling event is complete. Samples will be put into gusset bags and sealed before placing them in the cooler. Samples will be transported in a cooler on ice at <10ºC.

| **Matrix** | **# of Sampling Locations** | **# of Samples per**  **Location** | **Parameter** | **Field QC Samples** | **Total Number of Samples/**  **Measurements** | **Sampling SOP Reference** | **Project Objective for Sampling and Analysis or Monitoring** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| state what kind of matrix (air, water, soil, animal/ organism) is being sampled | provide the number of sampling locations | state if multiple efforts will be made at one location, such as sampling at different depths or taking repeated measurements over a given amount of time (i.e. once/quarter) | state what substance will be measured/ sampled | state how many and what type of quality control samples will be collected | state the total number of samples that will be collected for each sampling event or total project including field QC samples | state what specific methods will be used for the sample/ monitoring data collection. Attach any SOPs as necessary | state why the data will be collected at the particular location, frequency and time |
| Water | {#} | {#} | Enterococcus | None | {#} per sampling event | QAPP or EPA provided SOP, see Template #11 | Determine pathogen indicators |
| Water | {#} | {#} | Total Coliforms | None | {#} per sampling event | QAPP or EPA provided SOP, see Template #11 | Determine pathogen indicators |
| Water | {#} | {#} | Escherichia Coli | None | {#} per sampling event | QAPP or EPA provided SOP, see Template #11 | Determine pathogen indicators |
| Water | {#} | {#} | Temperature, pH, DO, salinity, conductivity | 1 duplicate set of readings per sampling event | {#} per sampling event | QAPP or EPA provided SOP, see Template #11 | Record water quality parameters in the selected study area |

**Citizen Science QAPP Template #10B**

**Equipment List and Instrument Calibration**

**Equipment List** {edit as necessary}

|  |
| --- |
| Garmin Montana 650 T GPS |
| YSI ProPlus MPS |
| {120} mL sterilized plastic bottles |
| 1-L HDPE bottles |
| Calibration standards for YSI ProPlus MPS |
| Sampling poles |
| Gloves |
| Coolers with ice |
| Data sheets |
| Labels |
| Pens |

**Instrument Calibration and Maintenance**

|  |  |  |
| --- | --- | --- |
| **Instrument/Equipment** | **Calibration Frequency** | **Maintenance Requirements** |
| YSI multi-parameter sonde | Calibrate before each use per manufacturer’s instructions. Check calibration at the end of each day after use. | As per manufacturer’s instructions |
| Handheld GPS units | N/A | As per manufacturer’s instructions |

All calibrations for this project will be documented. Calibration records will be documented on the calibration data sheet provided in Appendix 3. The calibration for the YSI 556 MPS unit will be performed each sampling day before the sampling teams leave for the field in accordance with the manufacturer’s instructions. A calibration check will be performed at the end of the day to see if any drift occurred in the YSI 556 MPS unit. Calibration records will include date, time, name of individual doing calibration, and the calibration results themselves. Acceptance criteria for calibration checks will be included on the data sheets. Any data that does not meet the acceptance criteria will be qualified. The Project QA Manager will be responsible for maintaining these records.

**Citizen Science QAPP Template #11**

**Analytical Methods**

**{edit as necessary, only if lab work being done}**

| **Matrix** | **Analytical**  **Group/ Parameter** | **Reporting Limit** | **Detection Limit** | **Analytical & Preparation Method/**  **SOP Reference** | **Sample**  **Volume** | **Containers**  **(*number, size, type*)** | **Preservation**  **Requirements (*chemical, temperature, light protected)*** | **Maximum Holding Time (*preparation/ analysis)*** | **Laboratory used for Analysis** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Water | Enterococcus | 10 MPN/ 100 mL | 1 MPN/ 100 mL | Guidance Document for Citizen Science Pathogen Monitoring of Enterococcus Using IDEXX Enterolert with Quanti-Tray ® 2000  (Appendix 1) | 100 mL | 120 mL sterile HPDE sample containers | Store on ice after collection and during transport | Analyzed as soon as possible and all samples incubated within 8 hours of collection | {organization}  {address} |
| Water | Total Coliforms | 10 MPN/ 100 mL | 1 MPN/ 100 mL | Guidance Document for Citizen Science Pathogen Monitoring of Total Coliforms and E. coli Using IDEXX Colilert with QuantiTray ® 2000  (Appedix 2) | 100 mL | 120 mL sterile HPDE sample containers | Store on ice after collection and during transport | Analyzed as soon as possible and all samples incubated within 8 hours of collection | {organization}  {address} |
| Water | Escherichia Coli | 10 MPN/ 100 mL | 1 MPN/ 100 mL | Guidance Document for Citizen Science Pathogen Monitoring of Total Coliforms and E. coli Using IDEXX Colilert with QuantiTray ® 2000  (Appendix 2) | 100 mL | 120 mL sterile HPDE sample containers | Store on ice after collection and during transport | Analyzed as soon as possible and all samples incubated within 8 hours of collection | {organization}  {address} |

**Citizen Science QAPP Template #12**

**Field Data Sheet**

**{Feel free to use your own or the below EPA Region 2 sheets, which are in the appendices}**

The following data sheets to be utilized for this project are provided in the appendices as listed below:

* Field Sampling and Chain of Custody Datasheet – Appendix 3
* Field Instrument Calibration Sheet – Appendix 4
* Laboratory Datasheet – Appendix 5

**Citizen Science QAPP Template #13**

**Training and Specialized Experience**

**Training**

In this section, state any required training that an individual involved with the project would need. Also include any refresher trainings that may be conducted.

|  |  |  |
| --- | --- | --- |
| **Personnel/Group to be Trained** | **Description of Training** | **Frequency of Training** |
| {state who will need the specific training and how many people will be trained *(ex. Students)}* | {state who will perform the training and what kind of information the trainee will learn *(ex. Proper use of YSI meter and water sampling equipment.*  *Instruction on information to be recorded in the field)}* | {state how many times the training will be conducted during the project *(ex. Session at the beginning of the sampling season)}* |

Training will be provided to {organization} by EPA Region 2 on the following: {choose which you will require}

* YSI ProPlus
* GPS units
* Turbidity Tubes
* Field Sampling Techniques
* Data Management and Review
* Enterolert
* Colilert-18

By special request, EPA will also provide the following training: {choose which you will require, or, delete this portion}

* Microplastic Trawl by boat
* Benthic Macroinvertebrate Collection

**Specialized Experience**

If any individuals have specialized experience that will be utilized by the project please complete the specialized experience table. State who the individual is, and their years of experience.

|  |  |  |
| --- | --- | --- |
| **Person** | **Specialized Experience** | **# of Years of Experience** |
| {Name} | *{w*hat specialized experience they have related to the project *(ex. Freshwater fish biologist, use of real-time monitoring equipment such as YSI meters. Experience in the collection of water samples for multiple parameters)}* | {#} |

**Citizen Science QAPP Template #14**

**Assessments and Oversight**

Assessments and project oversight include various reviews to identify shortcomings or deviations from the project. For each type of assessment, describe procedures for handling QAPP and project deviations encountered during the planned project assessments

**{Edit as necessary}**

| **Assessment**  **Type** | **Frequency of Assessment** | **What is Being Assessed** | **Who will Conduct the Assessment** | **How Issues or Deviations will be Addressed** |
| --- | --- | --- | --- | --- |
| Sampling protocol | Monthly | Sample container & transport; sample volume; chain of custody record; sample temperature | {name or group} | Personal communication with field personnel |
| Laboratory Protocol | Monthly | All QC measures; Completeness of data sheet | {name or group} | Correct errors; personal communication with analyst |
| Data Transcription | Monthly | Verification of data sheets against sample trays; completeness and accuracy of electronic data | {name or group} | Correct errors |

**Citizen Science QAPP Template #15**

**Data Management**

**Data Management**

Describe the data management processes used throughout the life of the project. Data management includes: recording and transcribing field notes, logging and retrieval of instrument data, transmittal of automated field and laboratory results, data transformation and reduction procedures, compilation of survey results, and data storage, retrieval and security uses throughout the project. Describe the way data handling errors will be controlled (i.e. spot checks for transcription and calculation errors).

**{edit as necessary}**

All data will be collected on the field/calibration/laboratory datasheets. After each field sampling event, the data will be checked for completeness, missing information or questionable data. The individual responsible for data entry will contact the field sampling team for the missing data and have the team clarify any discrepancies with the data. The data will be entered into electronic spreadsheets.

The Project QA Manager will review 10% of the data to verify accuracy of the data entered into the spreadsheet from the field datasheets. The Project QA Manager will aggregate the data and correct any obvious data problems. The validated and completed electronic spreadsheets will be emailed to Rachael Graham of EPA Region 2, or the designated contact, by the Project QA Manager no longer than 6 months after the completion of the project.

{Delete this section if you do not plan on uploading to WQX/STORET}

If the data will be uploaded to WQX/STORET, Region 2 will supply the proper preformatted WQX/STORET Volunteer Template Spreadsheet to the Project QA Manager. The data must be sent in the WQX/STORET spreadsheet format to Ms. Graham within 6 months of project completion. Ms. Graham will coordinate the testing and loading of the project data into WQX/Storet with the proper EPA Region 2 staff. Once all uploading is complete, the Project QA Manager will confirm the completeness and accuracy of the project data in the WQX/Storet database so that the data may be shared with the public and regulatory agencies. The original datasheets will be stored by the Project Leader for 5 years after the completion of the project in the project file.

**Citizen Science QAPP Template #16**

**Data Review and Usability Determination**

Include in this section the types of checks that will be performed at the end of the project to determine if the data collected is usable for achieving the goals of the project. Examples of data checks are provided in the table below.

**Data Checks**

|  |  |
| --- | --- |
| **Field/Lab** | **Data Management** |
| Monitoring performed per SOPs or QAPP | Data entry and transcription errors |
| Measurements performed correctly | Calculation/reduction errors |
| Calibrations performed correctly | Proper data and document storage |
| Data meets acceptance criteria | Missing data documented |
| Holding times | {add as necessary} |
| Evaluate any deviations from QAPP or SOPs to determine the impact to the data and project objectives |  |
| {add as necessary} |  |

Describe the process used to determine the usability of your project data. If your data review, based on the table above, does not uncover any issues and all of your QC criteria are satisfied, then your data will be assumed to be usable for the intended project objective. However, this is not always the case and so you will need to lay out a process for determining data usability in the event that all QC criteria are not met.

{Intended use of the data will depend on the objectives of your project, if you are in fresh or marine water and established designated uses of your project water body. Listed below is an example of a chart to interpret data based on a project’s individual results using *Enterococcus* in marine waters. A rationale based on your project objectives should be used to develop your own categories. In the example below, national water quality standards for primary contact recreation were tied in to the different levels. Your Citizen Science Project may use different numerical designations to indicate relevance, but you should have a rationale for selecting the levels. Most projects use their state’s regulatory levels.}

|  |  |  |
| --- | --- | --- |
| **Category** | **Range** | **Description** |
| Low | < 61 MPN/100 mL | 61 is the lowest criteria for both Freshwater and Marine *Enterococcus* WQS Single Sample Maximum Concentration (SSMC) for Primary Contact Designated Beach Site (using 1986 WQS *Enterococcus)* |
| Moderate | 61 – 104 MPN/100 mL | 104 is the SSMC for Marine SSMC and 61 is the SSMC for Freshwater Primary Contact Designated Beach Site |
| High | 105 – 500 MPN/100 mL | 500 is the SSMC for Marine SSMC for Infrequently used Full Body Contact Recreation (575 for Freshwater) |
| Very High | 501 & > MPN/100 mL | 501 would not meet any SSMC for any full body contact in marine water (575 for Freshwater) |

All data issues identified by the Project QA Manager, including but not limited to the items stated in the Data Checks table above, will be discussed with the Project Leader to determine data usability on a case by case basis. All decisions to allow data that did not fully comply with QC criteria or QAPP requirements will be explained, and any resultant limitations on data use fully discussed in the final project report.

**Citizen Science QAPP Template #17**

**Reporting**

**Reports**

Specify the frequency of all reports, the names of the originators and to whom they will be issued. Itemize what information and records must be included in the report(s). This might include but is not limited to the following:

* Sample collection records
* QC sample records
* Equipment calibration records
* Assessment reports
* Data reconciliation results and associated recommendations/limitations
* Final report of results

**Note:** If your project will include posting data to a website for public access, state in your description information about how data limitations will be conveyed.

**{Include all reports to be completed for your organization. Below are the EPA requirements only}**

Project Leaders will submit monthly progress reports to the EPA Region 2 Citizen Science Coordinator. This report can be found as Appendix 6.

A final report is also due to the Citizen Science Coordinator within 6 months of project completion. This will include, but is not limited to the following elements:

* Organization and Background
* Project Goals and Objectives
* Project Description (including timeline and photos)
* Impacted Community
* Summary of Results (including field data sheets and final data package)
* Conclusion/Next Steps

The rationale for the use of any data that do not fully comply with the quality criteria requirements of the approved QAPP will be fully explained in the final report.

Appendix 1

Guidance Document for Citizen Science Pathogen Monitoring of Enterococcus

Using IDEXX Enterolert with Quanti-Tray ® 2000

Revision 6.3, March 2017

{see separate attachment}

Appendix 2

Guidance Document for Citizen Science Pathogen Monitoring of Total Coliforms and *E. coli*

Using IDEXX Colilert with QuantiTray ® 2000

Revision 1.2, March 2017

{see separate attachment}

Appendix 3

Field Sampling and Chain of Custody Datasheet

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Station ID** | **No.** | **Latitude**  **DD.DDDDD** | | **Longitude**  **DD.DDDDD** | | **Picture ID/NAME** | | **Picture Time** | | **Lab Parameter(s)/**  **Bottle Size/**  **Bottle Material** | | | **Collection Time** | | | ***Water Temp. (oC)*** | | ***pH***  ***(SU)*** | | ***Dissolved Oxygen (mg/L)*** | | | ***Specific Conductance***  ***(uS/cm)*** | ***Conductivity***  ***(mS/cm)*** | | ***Salinity***  ***(ppt)*** | ***Turbidity Tube***  ***(NTU) OR cm*** |
|  | 1 |  | |  | |  | |  | |  | | |  | | |  | |  | |  | | |  |  | |  |  |
|  | 2 |  | |  | |  | |  | |  | | |  | | |  | |  | |  | | |  |  | |  |  |
|  | 3 |  | |  | |  | |  | |  | | |  | | |  | |  | |  | | |  |  | |  |  |
|  | 4 |  | |  | |  | |  | |  | | |  | | |  | |  | |  | | |  |  | |  |  |
|  | 5 |  | |  | |  | |  | |  | | |  | | |  | |  | |  | | |  |  | |  |  |
|  | 6 |  | |  | |  | |  | |  | | |  | | |  | |  | |  | | |  |  | |  |  |
|  | 7 |  | |  | |  | |  | |  | | |  | | |  | |  | |  | | |  |  | |  |  |
|  | 8 |  | |  | |  | |  | |  | | |  | | |  | |  | |  | | |  |  | |  |  |
|  | 9 |  | |  | |  | |  | |  | | |  | | |  | |  | |  | | |  |  | |  |  |
| Samples iced immediately after collection? | | | No  Yes | | | | | | Samples collected approx. 1 ft. below surface? | | | | | | No  Yes | | | |  | | Sample Bottle Lot #: | | | | | | | | |
| **1a. Current Weather Conditions (circle):** Clear Partly Cloudy Mostly Cloudy Foggy Drizzle Rain | | | | | | | | | | | | 1b. **Rain in Past 24 hours (circle)?** Yes No Amount in inches: | | | | | | | | | | | | | USEPA - Citizen Science (6-1-2012) v2.png | | | |
| **2. Odor(Write Station ID/No below to any that apply): Musty Sewage Chlorine Petroleum Decay (dead organisms) Sulfide (Rotten Eggs)** | | | | | **Musty** | | **Sewage** | | | | **Chlorine** | | | **Petroleum** | | | **Decay** | | | | | **Sulfide (rotten eggs)** | | |
|  | | | | |  | |  | | | |  | | |  | | |  | | | | |  | | |
| **3. Animals(Write Sta. ID/No. below to any that apply)** | | | | | **Gulls** | | **Geese** | | | | **Ducks** | | | **Possum** | | | **Cattle** | | | | | **Other** | | |
|  | | | | |  | |  | | | |  | | |  | | |  | | | | |  | | |
| **4. Tide at time of sampling (circle)?** | | | | | **Not Tidal** | | **High** | | | | **Ebb** | | | **Slack** | | | **Low** | | | | | **Flood** | | |
| **5. Other Observations- Include Sample # (i.e. foam present, oil present, trash, swimmers, fishing, boating, etc)** | | | | | | | | | | | | | | | | | | | | | | | | |

Comments:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Station ID:** | | | | | **Sample ID:** | | | | | | | | | | | |
| **Date:** | | | | | **Water Body:** | | | | | | | | | | | |
| **Sampling Team:** | | | | | | | | | | | | | **Time:** | | | |
| **GPS Coordinates in DD.DDDDD** | | | | **Lat:** | | | | | **Long:** | | | | | | | |
| **GPS #:** | | | | | | | **YSI Sonde #:** | | | | | | | | | |
| **Water Quality** | | | | | | | | | | | | | | | | |
| **Water Temperature (oC):** | | | | | | | **pH (Std Units):** | | | | | | | | | |
| **Dissolved Oxygen (%):** | | | | | | | **Dissolved Oxygen (mg/L):** | | | | | | | | | |
| **Conductivity (mS/cm):** | | | | | | | **Sp. Conductance @ 25 oC (uS/cm):** | | | | | | | | | |
| **Salinity (0/00):** | | | | | | | **Turbidity (NTU):** | | | | | | | | | |
| **For Lab Use**  **(Nutrient Analysis Only)** | | | | | | | | | | | | | | | | |
| **Total Nitrogen (mg/L):** | | | | | | | **Total Phosphorous:** | | | | | | | | | |
| **Orthophosphate (mg/L):** | | | | | | | | | | | | | | | | |
| **Weather** | | | | | | | | | | | | | | | | |
| **Cloud Cover (Circle One)** | | | | | | | **Precipitation** | | | |  | | | | **Source** | |
| **Clear** | | | **Broken** | | | | **Rain Now?** | | | | **Yes/No** | | | |  | |
| **Scattered** | | | **Overcast** | **Obscure** | | | **Rain past 24 hrs?** | | | | **in** | | | |  | |
| **Comment:** | | | | | | | **Rain past 48 hrs?** | | | | **in** | | | |  | |
| **Tide at time of Sampling** | | | | | | | **Water Discoloration Y/N** | | | | | | | | | |
| **Tide (Check One)** | | | | | | | **Apparent Color** | | | | | | | | | |
| **High (DH)** |  | | **Ebb** |  | | | **Blue** |  | | | | **Black** | | | |  |
| **Low (DL)** |  | | **Flood** |  | | | **Green** |  | | | | **Orange** | | | |  |
| **Not Tidal (NT)** |  | |  | | | | **Brown** |  | | | | **Clear** | | | |  |
| **Comment:** | | | | | | | **Other Color:** | | | | | | | | | |
| **Odor - Adverse or Offensive: Yes/No (If Yes check box for those that apply, comment)** | | | | | | | | | | | | | | | | |
| **Musty** |  | | **Petroleum** |  | | | **Other/Description:** | | | | | | | | | |
| **Sewage** |  | | **Decay** |  | | |
| **Chlorine** |  | | **Sulfide** |  | | |
| **Animals / Nonpoint Sources** | | | | | | | | | | | | | | | | |
|  | **Y/N** | **Description, number** | | | | | | | | | | | | | | |
| **Wildlife** |  |  | | | | | | | | | | | | | | |
| **Livestock** |  |  | | | | | | | | | | | | | | |
| **Domestic Pets** |  |  | | | | | | | | | | | | | | |
| **Other** |  |  | | | |  | | | |  | | | |  | | |
| **Other Observations** | | | | | | | | | | | | | | | | |
|  | **Y/N** | **Comment** | | | |  | | | | **Y/N** | | | | **Comment** | | |
| **Foam/Suds** |  |  | | | | **Outfall nearby** | | | |  | | | |  | | |
| **Oil/Grease** |  |  | | | | **Active Discharge** | | | |  | | | |  | | |
| **Trash/Debris** |  |  | | | | **Other:** | | | |  | | | |  | | |
| **Sewage** |  |  | | | |  | | | |  | | | |  | | |
| **Observed Activities in Waterbody at time of sampling (Please describe)** | | | | | | | | | | | | | | | | |
|  | **Y/N** | **Description** | | | |  | | | | **Y/N** | | | | **Description** | | |
| **Swimming** |  |  | | | | **Fishing** | | | |  | | | |  | | |
| **Boating** |  |  | | | | **Other** | | | |  | | | |  | | |
| **Photos Taken? Yes/No** | | | | | | | | | | | | | | | | |
| **Photo ID** | | **File Name** | | | | **Description** | | | | | | | | | | |
|  | |  | | | |  | | | | | | | | | | |
|  | |  | | | |  | | | | | | | | | | |
|  | |  | | | |  | | | | | | | | | | |
| **Data Sheet Completed By: (Sign and Date)** | | | | | | | | | | | | | | | | |

Appendix 4

Field Instrument Calibration Sheet

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Prep:** YSI m/n 556 s/n\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date / Time \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | |
| Battery good (Y/N) | Clean/Check probes (Y/N) | | | | | |
| Current Local Barometer: Time / in Hg: \_\_\_\_\_\_\_: \_\_\_\_\_\_ | | | convert (25.397088 mmHg/inHg) = \_\_\_\_\_\_\_\_mmHg | | | |
| Conductivity Calibrator Soln.: uS/cm | | Accuracy: | | Lot: | Exp. Date | Certificate (Y/N) |
| pH buffer Solutions:   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | pH Brand | NIST Traceable(Y/N) | pH Buffer | Lot No. | Exp. Date | Certificate (Y/N) | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | | | | | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Conductivity Calibrator Calibration (Pre-sampling) and Verification (Post-sampling)**  **TIP:** 55mL solution mark on calibration cup; For example: Freshwater, Enter 1 mS/cm (1mS/cm = 1,000uS/cm) | | | |
| **Pre-Sampling** | | **Post-Sampling** | |
| SC Reading  (uS/cm) | Within Calibrator Accuracy  (from prep above) | SC Reading  (uS/cm) | Within Calibrator Accuracy  If no, data should be qualified. |
|  |  |  |  |
| Print Name/Sign/Date/Time: | | Print Name/Sign/Date/Time: | |

|  |  |  |
| --- | --- | --- |
| **Dissolved Oxygen (DO) Calibration (Pre-sampling)**  **TIP:** Warm up instrument at least 10 minutes to allow sensor to polarize. Add 1/8” water to mark on calibration cup; Temp/DO sensors are NOT immersed in water.  Allow 10 minutes for temperature equilibration. | | |
| Calibration Method: Percent (%) Saturation | Barometric Pressure: \_\_\_\_mmHg (fromabove) | DO cap: 2.0mil - blue |
| Print Name/Sign/Date/Time: | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **pH Calibration (Pre-sampling) and Verification (Post-sampling)**  **TIP:** 30mL solution mark on calibration cup for each buffer; Allow buffers to equilibrate to temperature where you are calibrating | | | |
| **Pre-Sampling** | **Post-Sampling** | | |
| From pH bottle Enter pH that is @Temp  (begin with pH 7) | Place pH probe in 7 pH  and record result (SU) | Record  pH/Temp  on bottle | Is pH within ± 0.2SU of probe and pH on bottle @ Temp?  If no, data should be qualified. |
| SU / C | SU / C | SU / C | (Y/N) : |
| SU / C |  |  |  |
| SU / C |  |  |  |
| Print Name/Sign/Date/Time: | Print Name/Sign/Date/Time: | | |

Comments: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Appendix 5

Laboratory Datasheet

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Pr**oject Name: Project/Sampling Event #:**  **Qualifiers:**  “U” –Undetected  When, no wells fluoresce.    “J”- Estimated Value  When, Minor deviation from protocol occurs that would not likely affect usability of data. Ex. Cooler temperature 12 oC or incubator temperature off by a small amount.  Also we will use “J” when there may be bias from the Positive Control i.e. Pos. Control Result < or > acceptable recovery.    “R” – Rejected  When, Major deviation from protocol or very high blank contamination occurs; i.e. Missed holding times; If blank contamination is < Reporting limit than no qualifier needed.  **COMMENTS:** | | | | | | | | | | | | | | | | | | | |
| **Sample ID** | | **Station ID** | | **X** | **100 mL Sample** | | | | |  | **X** | | **10 mL Sample** | | | | X Dil | | **Final MPN/100 mL** |
|  | |  | |  | Large Wells | | Small Wells | | Table MPN |  |  | | Large Wells | Small Wells | | Table MPN | 1 or 10 (circle) | |  |
| **Blank** | | QC | | X |  | |  | |  |  |  | | | | | | | |  |
| **Positive Control** | | Enterococcus | | X |  | |  | |  |  |  | | | | | | | |  |
|  | |  | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
|  | |  | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
|  | |  | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
|  | |  | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
|  | |  | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
|  | |  | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
|  | |  | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
|  | |  | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
|  | |  | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
|  | |  | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
|  | |  | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
|  | |  | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
|  | |  | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
|  | |  | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
|  | |  | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
| **Dup** | | Lab Dup | |  |  | |  | |  |  | X | |  |  | |  | **1 10** | |  |
| **Positive Control Result within manufacturers Acceptance Limits? Yes or No Sample Duplicate RPD < 30% Yes or No** | | | | | | | | | | | | | | | | | | | |
| **Incubator** | Manufacturer:  Serial #: | | | | | Temp 40.5 – 41.5 oC at start of incubation? Y or N  Temp 40.5 – 41.5 oC at end of incubation? Y or N | | | | | | | | | | | If No, Specify:  If No, Specify: | | |
|  |  | | | | |  | | | | | | | | | | |  | | |
| **Reagent/Supply** | | | **Manufacturer** | | | | | **Cat #** | | | | **Lot #** | | | **Expiration Date** | | | **Lot Checked?** | |
| Enterolert Reagent | | | IDEXX | | | | |  | | | |  | | |  | | | **Y N NA** | |
| Quantitray 2000 | | | IDEXX | | | | |  | | | |  | | |  | | | **Y N NA** | |
| Sample Bottle | | |  | | | | |  | | | |  | | |  | | | **Y N NA** | |
| Sterile DI Water 90 mL | | |  | | | | |  | | | |  | | |  | | | **Y N NA** | |
| Enterococcus QC Bacteria | | |  | | | | |  | | | | | | | True Val: Accept Limits: | | | | |
| **Test Conducted By and Date** | | | **Time Preparation Started** | | | | | **Date/Time Incubated** | | | | | | | **Result Read by Date & Time** | | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Pr**oject Name: Project/Sampling Event #:** | | | | | | | | | | | | | | | | | | | |  |
| **Sample ID** | | **Station ID** | | **DF** | **100% Sample** | | | | |  | **DF** | **10% Sample (specify if different DF used)** | | | | | | | **Final MPN/100 mL** | **Qualifier Needed?** |
|  | |  | |  | Large Wells | | Small Wells | Table MPN | |  |  | Large Wells | | Small Wells | | Table MPN | | | (Table MPN x DF) | U, J, or R? |
| **Blank** | | QC1 | | 1 |  | |  |  | |  | Sterile DI Water 99 mL | | | | | | | |  |  |
| **TC Positive Control** | | QC2 | | 1 |  | |  |  | |  | Sterile DI Water 99 mL + *Enterobacter* QC | | | | | | | |  |  |
| **EC Positive Control** | | QC3 | | 1 |  | |  |  | |  | Sterile DI Water 99 mL + *E.coli* QC | | | | | | | |  |  |
|  | | Duplicate QC4 | |  |  | |  |  | |  | 10 | |  |  | |  | | |  |  |
|  | |  | |  |  | |  |  | |  | 10 | |  |  | |  | | |  |  |
|  | |  | |  |  | |  |  | |  | 10 | |  |  | |  | | |  |  |
|  | |  | |  |  | |  |  | |  | 10 | |  |  | |  | | |  |  |
|  | |  | |  |  | |  |  | |  | 10 | |  |  | |  | | |  |  |
|  | |  | |  |  | |  |  | |  | 10 | |  |  | |  | | |  |  |
|  | |  | |  |  | |  |  | |  | 10 | |  |  | |  | | |  |  |
|  | |  | |  |  | |  |  | |  | 10 | |  |  | |  | | |  |  |
|  | |  | |  |  | |  |  | |  | 10 | |  |  | |  | | |  |  |
|  | |  | |  |  | |  |  | |  | 10 | |  |  | |  | | |  |  |
|  | |  | |  |  | |  |  | |  | 10 | |  |  | |  | | |  |  |
|  | |  | |  |  | |  |  | |  | 10 | |  |  | |  | | |  |  |
|  | |  | |  |  | |  |  | |  | 10 | |  |  | |  | | |  |  |
|  | |  | |  |  | |  |  | |  | 10 | |  |  | |  | | |  |  |
|  | |  | |  |  | |  |  | |  | 10 | |  |  | |  | | |  |  |
| **Positive Control Result within manufacturers Acceptance Limits? Yes or No** | | | | | | | | | | | | | | | | | | | |  |
| **Incubator** | Manufacturer:  Serial #: | | | | | Temp 34.5 – 35.5 oC at start of incubation? Y or N  Temp 34.5 – 35.5 oC at end of incubation? Y or N | | | | | | | | | | | If No, Specify:  If No, Specify: | | | Therm. #: |
| **Reagent/Supply** | | | **Manufacturer** | | | | | | **Cat #** | | | | **Lot #** | | **Expiration Date** | | | **Notes** | | |
| Colilert Reagent | | | IDEXX | | | | | |  | | | |  | |  | | |  | | |
| Quanti Tray 2000 | | | IDEXX | | | | | |  | | | |  | |  | | |  | | |
| Sample Bottle | | |  | | | | | |  | | | |  | |  | | |  | | |
| Sterile DI Water: | | |  | | | | | |  | | | |  | |  | | |  | | |
| Comparator: | | | IDEXX | | | | | |  | | | |  | |  | | |  | | |
| TC QC Bacteria | | |  | | | | | |  | | | |  | |  | | | **True Val= Accept Limits= MPN 100 mL:** | | |
| EC QC Bacteria | | |  | | | | | |  | | | |  | |  | | | **True Val= Accept Limits= PN 100 mL** | | |
| **Test set up started by:** | | | **Date/Time Test Startup Began** | | | | | | **Date/Time Incubated** | | | | | | **Results Read by Date & Time** | | | | | |

Appendix 6

EPA Region 2 Citizen Science Equipment Loan Program

Monthly Report Form

|  |  |
| --- | --- |
| Organization |  |
| Organization Name: |  |
| Contact Name: |  |
| Number of People Engaged in Sampling: |  |
| Approximate Number of Hours Sampling: |  |

|  |  |
| --- | --- |
| Sampling - Only fill out the fields relevant to your project. | |
| Number of Stations Visited: |  |
| Number of YSI Readings Taken:  *(one recording of all parameters, not individual)* |  |
| Number of Turbidity Tube Readings Recorded: |  |
| Number of Samples Collected for: | |
| Pathogens: |  |
| Microplastics: |  |
| Other (please identify type): |  |

|  |  |
| --- | --- |
| Analysis - Only fill out the fields relevant to your project. | |
| Number of Pathogen Samples Analyzed for: | |
| Enterococcus: |  |
| E.coli & Total Coliforms: |  |
| Number of Microplastic Samples Processed: |  |

|  |  |
| --- | --- |
| Issues |  |
| Please identify any issues relating to the equipment: |  |