

## Standard Operating Procedure (SOP) 7.4.1

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### Quality Systems Assessment for Citizen Monitors Conducting Water Quality Monitoring Field Activities

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#### ***1. Purpose***

This standard operating procedure (SOP) describes a process used to perform quality systems assessments of the program's field activities (aka field audits). The purpose of these assessments is to evaluate field practices, procedures, personnel, and equipment against requirements of an applicable quality assurance project plan (QAPP) or other project documents. Each audit is to be performed in an unbiased manner and each field crew should be assessed in the same manner as others being assessed.

Field activities are actions done outside of a laboratory to collect environmental samples and measurements. Field activities for which this specific SOP applies include, but might not be limited to: water, sediment and aquatic bioassessment (benthic macroinvertebrates and algae) sampling; the in situ use of water quality monitoring test kits and meters (including data loggers), and physical habitat measurements.

While this SOP is intended for citizen monitors, it may be equally applicable to other programs and projects.

#### ***2. Responsibilities***

Implementation of this SOP is shared among a citizen monitoring organizations personnel such as: Volunteer Coordinators, Trainers, QA Officer, Lead Assessor, Project Manager, and the assessed field crew.

The Project Manager is responsible for:

- Establishing an assessment schedule for each fiscal year;
- Ensuring adequate funding for field assessments; and
- Overseeing field assessment processes.

The QA Officer (or designee) is responsible for:

- Evaluating the assessment report response;
- Assisting to facilitate corrective actions as needed; and
- Evaluating the assessment report summary.

The Volunteer Coordinator/ trainer is responsible for:

- Assisting annual assessment coordination;
- Reviewing annual audit reports; and
- Assisting to facilitate corrective actions as needed.

The Lead Assessor is responsible for:

- Coordinating assessments with the involved field crew;
- Requesting necessary materials from the involved field crew;
- Reviewing provided materials against QAPP requirements;
- Obtaining necessary personal protective equipment (PPE) and material safety data sheets (MSDSs) before the assessment;
- Conducting field assessments;
- Drafting an assessment report;
- Drafting an assessment report summary;
- Archiving assessment-related documents and records; and
- Avoiding conflict of interest.

The Lead Assessor must have practical experience in conducting water quality monitoring fieldwork, and must demonstrate a practiced knowledge of field procedures and other protocols being used by the assessed field crew.

It is recommended that the Lead Assessor along with trainers of field monitoring procedures, and the authors of Standard Operating Procedures (SOPs); participate in "calibration" exercises which promote standardization of field monitoring practices among water quality monitoring programs.

The Project Manager and assessed field crew are responsible for:

- Providing the materials requested prior to the assessment;
- Hosting assessments;
- Drafting an assessment response; and
- Implementing the follow-up measures proposed in the assessment response.

### **3. Procedure**

#### **3.1 Logistics**

Within the first quarter of each fiscal year, depending on funding and adequate staff time, the Volunteer Coordinator and QA Officer draft an assessment schedule for the current fiscal year. Field crews need not be assessed on an annual basis but an attempt will be made to assess field crews annually, unless a reassessment during the same fiscal year is warranted.

*The following sections detail the assessment process from initiation to closure.*

#### **3.2 Document Review**

Prior to the assessment, the Lead Assessor will request certain documents and records from the field crew leader. These may include, but are not limited to:

- Monitoring plans (MPs);
- QAPPs;

- Field data sheets;
- Maps;
- Reconnaissance information;
- Field safety plans;
- MSDSs;
- Equipment calibration and maintenance records;
- Equipment lists;
- Access permits; and
- Aquatic invasive species - hazard analysis critical control point plans (AIS - HACCPs).

Prior to conducting the field assessment, the lead assessor will review the supplied documents against QAPP requirements.

### **3.3a Field Assessment**

The lead assessor will utilize the Quality Systems Assessment for Citizen Monitors Conducting Water Quality Monitoring Field Activities Data Form (Appendix A) while performing the assessment. As part of the procedure, they may:

- Review calibration records;
- Inspect all equipment and field kits;
- Observe and question staff as they conduct their field activities;
- Examine water samples and benthos samples (benthic macroinvertebrates and/or algae) in the field and prior to being shipped to a laboratory;
- Examine field data sheets (hardcopy or electronic versions) prior to, during, and after the field work has been completed;
- Record observations and comments on the Quality Systems Assessment for Citizen Monitors Conducting Water Quality Monitoring Field Activities Data Form (Appendix A); and;
- Review field data form and comment notes prior to departing the field site.

Note: If an assessment of field crews employing visual physical habitat assessments is being made, separately assess multiple field crews on the same stream reach. If only one field crew is being assessed then the field crew should be assessed against the SOP and the physical habitat scores generated by the Lead Assessor.

### **3.3b Quality Systems Assessment for Citizen Monitors Conducting Water Quality Monitoring Field Activities Data Form (Appendix A):**

This form is to be used when conducting assessments of water quality monitoring field activities. The form has been separated into sections as they relate to field activity practices. It should be understood that not all segments apply to all assessments. For example, when conducting an assessment for field activities which do not involve bioassessments, the bioassessment sections are not to be used. SWAMP is an evolving

program and as field activities and QA change, this SOP and the System Assessment Field Activities Data Form may change as well.

**Items:** Describes the specific activity, which will be assessed. Where it states that the assessor is to watch a given activity, the assessor will watch that activity and will assess it in reference to the specific guidance for that activity.

**Y N N/A:** Was this item included within the assessment? The assessor will check the appropriate box; Y = Yes, N = No, N/A = Not Applicable.

**Comments and Suggested Corrective Actions:** The assessor shall provide comments as to how well the field crew performed the action being assessed. When the activity is not being performed according to referenced specifications, the assessor shall note whether the field crew's performance of that activity was a minor issue (e.g, the action was performed incorrectly but resulted in acceptable data) or a major issue (the action was not performed to referenced specifications and must be corrected). Corrective actions must also be noted on the System Assessment Field Activities Data Form.

#### ***4. Corrective Action***

The Project Manager for which the assessed field crew is working, is responsible for ensuring that all work and practices that are found to be unacceptable through the field assessment will be corrected to a level that is acceptable and in compliance with applicable SOPs and QA documents. If corrective action is warranted, it will be noted on the System Assessment Field Activities Data Form and within the project assessment report(s). When major issues are found, and especially when discovered in situations with relatively short windows of opportunity for sampling, immediate steps will be taken to expedite the reporting and correction timeline. This ensures that opportunities to improve practices are not lost during that sampling period, and the opportunity for acquisition of appropriate measurements, assessments, and samples will also not be lost. This may require notification and correction during the assessment itself. The assessment report and its response provide a structured and recorded dialog forum between the assessor and the Project Manager (see section 5) to aid in the facilitation of field activity compliance and corrections. At the discretion of the Volunteer Coordinator, Trainer QA Officer, or Project Manager, a subsequent assessment may be conducted in order to evaluate implementation of the corrective actions proposed in the assessment report response.

#### ***5. Documents and Records***

##### **5.1 Assessment Report**

Within one month of the assessment, the lead assessor will compile data sheets and notes into an assessment report. This report will follow a checklist format and will include findings and observations, supporting evidence for each, and references to the QAPP or other applicable requirements. It is required that the assessment report include recommendations for corrective actions and associated due dates.

##### **5.2 Assessment Report Response**

Within one month of receiving the assessment report, the field crew leader is required to prepare a written response to the Lead Assessor. The response should include detailed plans for corrective actions and associated due dates. Corrective actions must be well documented, and should include a follow-up plan to assess their efficacy.

Within two weeks of receipt, the assessment response will be reviewed by the Lead Assessor and the QA Officer. If the response is satisfactory, the lead assessor will issue a letter of acceptance. If the response is not satisfactory, the Lead Assessor and QA Officer will contact the field crew leader to work toward an acceptable resolution.

### **5.3 Assessment Report Summary**

The Lead Assessor will compile all individual assessment reports into an annual summary that includes suggestions for further development of the assessment program. This document will be submitted to the Project Manager, QA Officer and the Volunteer Coordinator for review.

Individual assessment reports may remain confidential and made available only to authorized staff and technical advisors of the field crew being assessed.

### **5.4 Document Management**

Documents and records (e.g., monitoring plans, training records...) used during the assessment process shall be retained by the Lead Assessor for five years past the completion of the assessment.

## **6. Health and Safety**

Appropriate personal protective equipment (PPE) must be worn during the assessment process. Prior to the assessment, material safety data sheets (MSDS) for all involved chemicals must be read by the lead assessor.

## **7. Definitions**

AIS HACCP- Aquatic Invasive Species-Hazard Analysis Critical Control Point; A self-inspection system for reducing the risk of spreading aquatic invasive species.

Assessment- An evaluation of a person, organization, process or product.

Assessment Report- A formal opinion issued by an assessor, auditor, as the result of an assessment, audit, or evaluation.

Assessor- An individual who conducts audits by using a systematic methodology for analyzing field activities and the supportive processes and procedures for those activities with the goal of highlighting potential data quality problems and recommending solutions.

BMI- Benthic macro invertebrate; Animals with no backbone or internal skeleton that are larger than ½ millimeter and live on the bottom of rivers, and streams.

Field Activities- Actions done outside of a laboratory to collect environmental samples and measurements.

MSDS- Material Safety Data Sheet; A form containing data regarding the properties of a particular substance and is intended to provide workers and emergency personnel with procedures for handling or working with that substance in a safe manner.

PPE- Personal protective equipment; Refers to protective clothing, goggles, gloves or other garment designed to protect the wearer's body from injury while working.

QA/QC- Quality Assurance/ Quality Control; A system of procedures, checks, audits, and corrective actions to ensure that all monitoring activities are of the highest achievable quality.

QAPP- Quality Assurance Project Plan; A tool for project managers and planners to document the type and quality of data needed for environmental decisions and to describe the methods for collecting and assessing those data.

QAPrP- Quality Assurance Program Plan; A document that serves as an umbrella document for use by each of SWAMP's contributing projects. It describes the program's quality system in terms of organizational structure; the functional responsibilities of management and staff; the lines of authority; and the interfaces for those planning, implementing, and assessing all activities conducted

SOP- Stand Operating Procedure, a set of instructions to achieve uniformity of the performance of a specific function or practice.

SWAMP- Surface Water Ambient Monitoring Program; The State Water Resource Control Boards' program for assessing water quality in California waters by conducting monitoring directly and through partnerships.

Note: For additional definitions please visit the EPA Glossary at: <http://www.epa.gov/glossary>.

#### 7. Acknowledgements

SWAMP QA Team (<http://swamp.mpsl.mlml.calstate.edu/>) for their review and contributions.

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