

Section A8. Special Training Requirements/Safety

Recommended Training for SWAMP Field Personnel

Proper training of field personnel represents a critical aspect of quality control. Field technicians are trained to conduct a wide variety of activities using standardized protocols to ensure comparability in data collection among crews and across geographic areas.

At a minimum, it is recommended that each field crew should consist of a Chief Scientist and a minimum of one technician. Minimum recommended qualifications for Chief Scientists should include an M.S. degree in biological/ecological sciences or similar related field, and at least three years of experience in field sampling/field data collection activities, or a B.S. degree and at least five years experience. The remaining crew members generally are recommended to hold B.S. degrees in the appropriate disciplines as just described, and preferably, at least one year's experience in field sampling/field data collection activities.

When a boat is required for sample collection activities, the vessel operator should be an experienced boat handler, and should be certified as having completed at least minimal U.S. Coast Guard boating safety training for the appropriate respective vessel, as well as well-versed in the safe and correct operation of on-board sample collection equipment and processes, including navigation skills and the use of GPS equipment. The vessel itself shall contain all proper U.S. Coast Guard-required personal floatation devices and other safety gear, have current state registration, and be in good operation and maintenance condition.

Likewise, documentation of completion of a driver safety training course is highly recommended for all SWAMP field staff, including the safe use and operation of a vehicle, boat/trailer towing and maneuvering to back-up, 4-wheel drive operation, etc. All vehicles shall have current registration and be in good operation and maintenance condition.

For training of SWAMP field staff, all sampling equipment (*e.g.*, boats, field instruments and field data equipment, grabs, nets, etc.), and all pertinent sample collection protocols will be used extensively during "hands-on" training sessions (actual field sample collection trips). By the end of the sampling training trip(s), all crew members must demonstrate proficiency in all the required sampling activities, as certified by the Chief Scientist for the training session(s), as documented in training records developed and maintained for all SWAMP field and lab personnel.

In addition to in-field training and certification/documentation of such training, all crews will be evaluated on their field performance during field QA audits conducted by SWAMP QA Program staff, when staffing and funding shall become available for the QA Program. The conducting of such field performance audits is recommended to be conducted every two years, or more often if necessary. If any deficiencies within a crew are noted during this QA audit, they will be

documented and remedied prior to continued field sampling. This can be accomplished by additional training or by changing crew composition, but verification of correction of any deficiencies must be documented in writing prior to the resumption of further sample collection activities. It is the responsibility of any and all SWAMP entities conducting field sample collection and field data measurements to develop and implement internal training and QA audit "checklists". Copies must be maintained in a central file by each SWAMP entity of all internal training and QA audit reports completed, as well as documentation of any deficiencies and corrective actions necessary to remedy such deficiencies. When requested, these records must be accessible to, or copies provided to, the SWAMP QA Program.

Safety Guidelines for Field Activities

Personnel conducting any field activities for SWAMP will be well-versed in standard safety procedures for such activities. It is the responsibility of the QA officer or Safety Officer or Supervisor, or designee, of the particular participating SWAMP entity conducting field activities to ensure that safety training is mandatory for all field personnel, and that such training is documented in training certifications/records maintained and updated for all participating SWAMP field staff. Each SWAMP entity conducting field activities is responsible for preparing and maintaining a current Field Safety Manual (FSM) in compliance with the Occupational Safety and Health Administration (OSHA), or equivalent state or local regulations. The FSM will be readily available to field personnel, including all appropriate Material Safety Data Sheets (MSDS) information for chemicals that may need to be used while in the field. Proper procedures for safe storage, handling, shipping, transport, and disposal of chemicals and other materials will be followed at all times in the field; each chemical or field sample will be treated as a potential health hazard and good field safety practices will be implemented accordingly. A thorough description of recommended "Recommended Minimum Safety Guidelines for SWAMP Field Activities" is provided in **Appendix H** of this SWAMP QAMP, which can serve as the FSM in most cases for entities in need of such a document.

Recommended Training and Proficiency Documentation for SWAMP Laboratory Personnel

To ensure samples are analyzed in a consistent manner, it is recommended that all SWAMP laboratories implement the measures which follow in the paragraphs below.

It is recommended that key laboratory personnel participate in an orientation session conducted during an initial site visit or via communications with appropriate SWAMP staff, either from the RWQCB's, or from SWAMP QA Program officials, or other designated staff as appropriate. The purpose of such a recommended orientation session is to familiarize key laboratory personnel with the SWAMP QAMP and the specific QA/QC program for the analyses being conducted by the respective laboratory for SWAMP. Participation in an Annual SWAMP Scientific Forum is another recommended venue for the exchange of data and ideas that can help to improve the SWAMP Program methodology and resulting information and strengthen the SWAMP QA/QC program.

Meetings, whether by phone or in person, shall be held with all participating laboratories at regular intervals to continually review QA/QC procedures, and to make recommendations for future revisions to update the SWAMP QAMP. The more frequent interactions possible with respective laboratory staff, the better the understanding of, and communication of, any key issues or correction of problems will be in the long run.

Minimum proficiency requirements that SWAMP analytical lab staff must meet shall be established and documented, and updated as necessary. Documentation of required expertise and on-going training for SWAMP laboratory staff is required for all participating laboratory entities. Documentation of each analyst or technician must be provided regarding their proficiency to use analytical equipment and conduct analytical protocols, as well as being documented as being proficient in-house for conducting any general lab processes, such as glassware cleaning, sample preparation and processing, hazardous materials handling, storage, disposal, etc. All lab staff must demonstrate proficiency in all the required laboratory activities that they conduct, as certified by the Laboratory QA Officer, or designee, as documented in training records developed and maintained for all SWAMP lab personnel.

Laboratory Health and Safety Requirements

All SWAMP laboratories shall be operated and maintained in a safe manner, and provide a working environment for staff that has as its top priority the implementation of any and all measures necessary for the highest level of protection of employee health and safety. Personnel in any laboratory performing analyses for SWAMP will be well-versed in good laboratory practices, including standard safety procedures. It is the responsibility of the particular participating laboratory QA Officer, laboratory manager and/or supervisor to ensure that safety training is mandatory for all laboratory personnel, and that such training is documented in training certifications/records maintained and updated for all participating SWAMP laboratory staff. Each laboratory is responsible for maintaining a current Laboratory Safety Manual (LSM) in compliance with Occupational Safety and Health Administration (OSHA), or equivalent state or local regulations. The LSM will be readily available to, and readily understood by, all laboratory personnel, including all appropriate Material Safety Data Sheets (MSDS) information. Proper procedures for safe storage, handling and disposal of chemicals will be followed at all times; each chemical will be treated as a potential health hazard and good laboratory practices will be implemented accordingly.