



QUALITY PLAN

for

State of Florida

Department of Environmental Protection

Regional Operation Centers

June 22, 2018

Quality Plan
for
State of Florida
Department of Environmental Protection
Regional Operation Centers

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Prepared by Kalina Warren, WQAP
Regional Operation Centers
May 2018

Signature Page

The undersigned have read and understood this Quality Plan, are charged with managing and improving the quality system and are responsible for ensuring that all staff properly execute the procedures discussed in the plan.

Julie Espy, Program Administrator

06/22/2018

Alicia Hogue, Environmental Administrator NW/NE/Tallahassee

06/22/2018

Kalina Warren, Environmental Administrator SW/S/SE/C

06/22/2018

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1 Introduction

The Florida Department of Environmental Protection (DEP) Quality Assurance (QA) program involves the implementation of a management system (planning, review, training, and assessment) to ensure that data collection, generation, interpretation, reporting, evaluation and archiving is of sufficient quality to support Department decisions. The effectiveness of our QA program is dependent upon the actions of all DEP staff, from “front line” employees to management, and as such, QA responsibilities are distributed throughout our organization. One aspect of the QA program is to ensure that DEP QA activities are carried out according to commitments made to the Environmental Protection Agency as enumerated in the DEP Quality Management Plan (QMP) (Revision No. 7, February 2014).

The DEP Secretary is committed to implementation of the quality assurance requirements in the QMP and as authorized at Section 403.0623, F.S., and Chapter 62-160, Florida Administrative Code (the DEP QA Rule, available at: [Chapter 62-160](#)). It is the Secretary’s intent to carry out these obligations and requirements as detailed in the Department’s QA Directive 972 (Effective September 18, 2009, revised November 1, 2016, available at: [DEP Directive 972](#)).

To execute the components of the DEP QA Directive, the Regional Operation Centers (ROCs) have developed a quality system. This document describes the steps we take to ensure the scientific and legal defensibility of environmental data we generate or use. It details the process of planning, training, execution, assessment and corrective action we undertake to ensure that environmental data meets our established quality criteria.

2 Basic Elements of ROCs Quality Plan

All staff in ROCs are expected to read, understand and follow the procedures and criteria as described in this plan, and to carry out their assigned responsibilities for effective utilization of our quality system. The Quality Plan explains both the process and criteria by which the ROCs quality system is managed. The plan is utilized as an instrument of internal communication to inform our staff of current and future quality assurance activities. It discusses how specific QA duties are assigned to responsible staff. We will revise our Quality Plan as needed, and pledge to ensure the consistent application of procedures and criteria for the generation or use of our environmental data. The Quality Plan will also be used as a training document for new staff and as a reference for experienced personnel. The plan and any revision(s) also serve as an archival record of our formal quality system.

The elements of our plan are consistent with the Department’s Quality Management Plan, Quality Assurance Directive, Quality Assurance Rule ([Chapter 62-160 F.A.C.](#)), and any current QA activities available at DEP [Quality Assurance](#) website. In addition, we ensure that our plan for all sampling activities, including field-meter testing, is consistent with DEP SOP FA 3300. Our plan addresses all activities associated with sampling, field testing, lab analysis and data review of any type, including those activities associated with database construction and management. Our plan also discusses how decisions about data use are made based on data quality assessments.

Where appropriate, we cite existing internal and external documents, including training manuals, guidance documents, SOPs, rules and tables.

3 Policy Statement

The Regional Operation Centers (ROCs) perform biological assessments and collect water samples from lakes, streams/rivers and other surface water bodies throughout Florida. This Quality Plan provides the procedures that are used to ensure that data generated by the ROCs is of verifiable quality and meets the scientific objectives of the DEP, as required by the Federal Clean Water Act, Chapter 403 of Florida Statutes, Chapters 62-160, 62-302, 62-303, 62-650, and 62-4, F.A.C. ROCs are committed to following good quality assurance (QA) and quality control (QC) management practices to produce all data.

It is the Regional Operation Centers' policy to:

- Use scientifically valid and legally defensible data for our decisions affecting protection of the environment;
- Have and implement the Quality System described in this document;
- Adaptively manage our Quality System to be consistent with provisions of the DEP Quality Assurance Management Plan;
- Ensure that each individual is properly trained to execute their assigned functions;
- Implement procedures to evaluate the quality of the data we use and to implement corrective actions when data do not meet our Data Quality Objectives;
- Periodically audit the performance and record-keeping practices of data generators we have responsibility for;
- Implement quality assurance procedures for the management of our data repositories;
- Perform a yearly systematic assessment of our quality assurance activities, including any corrective actions, with the findings submitted to the Standards and Assessment Section.

4 Ethics Statement

All employees of the Regional Operation Centers are held to high professional ethical standards in the performance of their duties. All employees are required to read, understand and sign an "Ethics Statement" attesting to their commitment to honesty and integrity in performance of their duties. In addition, all employees are required to attend an annual ethics training class. Improper, unethical or illegal actions will be dealt with according to the published Administrative Directives of the DEP.

5 Organization and Responsibility

ROCs reside within the Division of Environmental Assessment and Restoration (DEAR), Water Quality Assessment Program. ROCs previously were under the DEP Districts' management, but since November 2013 are part of the Division as the result of a reorganization. See ROCs organizational chart in Figure 1.

The main function of Regional Operation Centers involves field work including collection of surface and ground water samples as well as biological assessment of watersheds throughout Florida. Most of the field work is performed in support of Status and Trend Networks and Strategic Monitoring; however, we also support sampling needs of other DEP Programs like BMAP, TMDL, Aquatic Ecology and Quality Assurance, NPDES, Groundwater Protection, response to public complaints related to water quality issues. This Quality Plan addresses all sampling except for Status and Trend Monitoring Networks (S&T). That sampling is covered by a separate [Quality Manual](#) designed to specifically address S&T objectives. The purpose of Strategic Monitoring is to identify impaired surface waters as part of the state's waterbody restoration program for impaired waters.

The Water Quality Assessment Program (WQAP) is headed by the Program Administrator (PA) who is also responsible for Watershed Monitoring and Watershed Assessment Programs in addition to the ROCs. The

PA gives both the technical and administrative direction to the Program and is committed to the QA program described in this plan. The PA is supported by Environmental Administrators (EAs) who manage all direct oversight of the development and implementation of the Program's monitoring activities. The Strategic Monitoring Plans (SMPs) are developed annually by the Watershed Assessment Program. Monitoring specified in these plans is accomplished by ROCs.

Environmental Administrators who have direct supervisory responsibilities over ROCs' staff coordinate and participate in the quality evaluation of program data and provides oversight to ensure that staff performs their QA functions. EAs conduct systems audits of internal data generators and will conduct annual sampling performance audits. EAs also ensure that corrective actions are implemented for data non-conformance incidents as determined by evaluation of the data against our program's Data Quality Objectives. Additionally, the EAs are responsible for the overall Quality System and other logistical aspects of its implementation, such as coordinating associated training needs.

All ROCs staff participate in an on-going data review process to confirm if generated data meets objectives of the Program. If any data does not meet Program objectives appropriate corrective actions are performed.

The Florida DEP Laboratory (Chemistry and Biology Sections) has been selected to perform all laboratory analyses for data collected by the ROCs except for microbiological samples (E. coli, fecal coliforms and Enterococci). These samples are submitted to contracted commercial laboratories in order to meet short holding times.

5.1. Responsibilities of Key Personnel

There are seven Regional Operation Centers, NW, Tallahassee, NE, SW, South, Central, and SE performing sampling statewide. These Centers are managed by two Environmental Administrators who oversee the work of separate teams stationed in different locations. Each team is responsible for sampling in their designated geographic area. These areas correlate with watershed basins. Each team has a Team Leader designated by the Administrator. Team leaders are responsible for coordination of sampling schedules and data management while assuring that all procedures meet the requirements of the F.A.C. Chapter 62-160, Quality Assurance and program objectives.

The work of all ROCs is overseen by the Program Administrator who regularly meets with EAs and Team Leaders. In addition, all ROC employees have an opportunity to participate in monthly, state-wide meetings (teleconference or videoconference) to assure a good flow of communication and consistency in sampling and data management procedures, including quality control procedures.

5.1.1 Julie Espy, Program Administrator

Directs the activities of the Water Quality Assessment Program, which is responsible for administration of the State's Impaired Waters Program and the State's Ambient Monitoring Program for fresh waters. Provides direction on program priorities, establishes program administrative procedures, provides technical and policy input on rulemaking activities and rule implementation, and ensures that program expenditures are consistent with available budget.

Interacts with Division management to establish priorities for the programs, develop budgets, and help develop draft legislation, as needed, and coordinates with DEP programs and District offices, as well as local, state, and federal agencies, as needed.

Represents the Department in meetings and other activities with other DEP programs, federal, state and local government agencies and the public. Participates in technical work groups and technical advisory committees.

5.1.2 Alicia Hogue, Environmental Administrator, Northwest/Northeast/Tallahassee ROCs

Manages all aspects of monitoring activities for the Water Quality Assessment Program (WQAP) in the Northwest (Pensacola), Tallahassee and Northeast (Jacksonville) regional offices. Ensures that all aspects of the Water Quality Assessment Program's Status and Trend Networks, Strategic Monitoring, TMDL, BMAP, and any other assigned monitoring plans are implemented and data quality objectives are met in the most efficient and timely manner. Responsible for all field staff in all aspects of their work including: sample collection, handling and processing; data management, review, entry into DEP databases and interpretation; report writing; quality assurance and any response operation activities (i.e., fish kills, complaint investigations, etc.) in coordination with regional sampling teams. Ensures general administrative functions are accomplished (for example, proper handling of correspondence, adequate office equipment and supplies, and wise and efficient use of Department resources).

Participates in all aspects of the Program's monitoring activities in the assigned regional offices. Water quality sampling is conducted on both surface and groundwater. Biological assessments may include taxonomic analysis of freshwater, estuarine and marine flora and fauna. Participation in DEP training and some certifications are required to conduct water quality data collection and specialized floral and faunal biological assessments, including the Stream Condition Index, Rapid Periphyton Survey, Lake Vegetation Index, Linear Vegetation Survey, and Stream and Lake Habitat Assessments.

Attends program training as necessary. Assists in the training of newer personnel. Keeps the Program Administrator informed of section activities and concerns, responds to the Program Administrator in a timely manner and performs other duties as required, including representing her in her absence.

5.1.3 Kalina Warren, Environmental Administrator, Southwest/South/Central/Southeast ROCs

Manages all aspects of monitoring activities for the Water Quality Assessment Program (WQAP) in the Southwest (Tampa), Central (Orlando), Southeast (Ft. Pierce) and South (Ft. Myers) regional offices. Ensures that all aspects of the Water Quality Assessment Program's Status and Trend Networks, Strategic Monitoring, TMDL, BMAP, and any other assigned monitoring plans are implemented and data quality objectives are met in the most efficient and timely manner. Responsible for all field staff in all aspects of their work including: sample collection, handling and processing; data management, review, entry into DEP databases and interpretation; report writing; quality assurance and any response operation activities (i.e., fish kills, complaint investigations, etc.) in coordination with regional sampling teams. Ensures general administrative functions are accomplished (for example, proper handling of correspondence, adequate office equipment and supplies, and wise and efficient use of Department resources).

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Attends program training as necessary. Assists in the training of newer personnel. Keeps the Program Administrator informed of section activities and concerns, responds to the Program Administrator in a timely manner and performs other duties as required, including representing her in her absence.

5.2. Job Description

The DEP Bureau of Human Resources is a custodian of all position descriptions. It can be reached at:

914 B Douglas Building
Tallahassee, FL
Mail Station 70
850-245-2511

5.3. Signatory Authority

Approved signatories within the DEP ROCs are stated as:
Julie Espy, Program Administrator

5.4. Employee Credentials and Training

All ROC employees are highly skilled and knowledgeable in surface water quality issues. Most have four-year or higher college education and/or working experience in the environmental field.

All employees are required to be familiar with the current DEP SOPs that can be found at: [DEP SOPs](#). Special attention is paid to SOPs addressing collection of surface and ground water samples, field documentation, calibration of field meters, and field QA requirements.

All new employees are trained on sample collection techniques internally by more experienced staff. In 2016 a new Apprenticeship Program for Water Quality Sampling was developed for the field personnel in the Division of Environmental Assessment and Restoration. The purpose of the water quality sampling apprenticeship program is to provide a consistent, cost effective framework for training and authorizing staff on the required field methods used to support the DEP/DEAR mission. All new employees use appropriate checklists and document required training in Training Logs. A separate Apprentice Checklist are available for different field activities including: General Water Sampling, Ground Water Sampling, Surface Water Sampling, Sediment Sampling, Flow Sampling and Wastewater Sampling. New employees must complete training in the areas that pertain to their sampling to demonstrate competence. The Apprenticeship Program information is located on SharePoint and can be found [here](#).

Every three years, sampling personal is required to take an on-line test to assure their continuous proficiency and knowledge of DEP SOPs. Additionally, whenever possible, field staff is encouraged to attend training offered by the DEP Quality Assurance Section, Biocriteria meetings, or other training events or workshops.

All samplers performing intensive biological assessments are also required to have specific training and demonstrate competency due to the expert judgment required during this type of sampling. Individuals conducting assessments must train with qualified DEP staff (via workshops and/or participation in field sampling). Biological assessment training is provided by the Aquatic Ecology and Quality Assurance Section.

New ROC field samplers performing Stream Habitat Assessments (HA) must train with qualified DEP staff (via workshops and/or participating in field sampling) until they qualify and can remain in “pass” status. Training should be documented on Form FD 9000-34 and Event Log that can be found at: [Bioassessment Training](#). Habitat Assessment testing is conducted at select streams/ivers located throughout the state, and sites change every two years or as needed. All field samplers are required to participate in at least one testing event every two years. At all times, a minimum of one sampler from each sampling team must be in pass status in order to perform a Habitat Assessment.

New ROC field samplers conducting Stream Condition Index (SCI) sampling must train with qualified DEP staff (via workshops and/or participating in field sampling) and pass an online SCI knowledge test and field performance test (audit) to demonstrate competence. After passing the initial performance audit, samplers must pass a refresher audit every 5 years to remain in pass status. Training should be conducted using the SCI Training Checklist (SCI 1100) and Event Log (see the link under HA). SCI audits are administered by the Aquatic Ecology and Quality Assurance Section. At all times, a minimum of one sampler from each sampling team must be in pass status to collect a SCI sample.

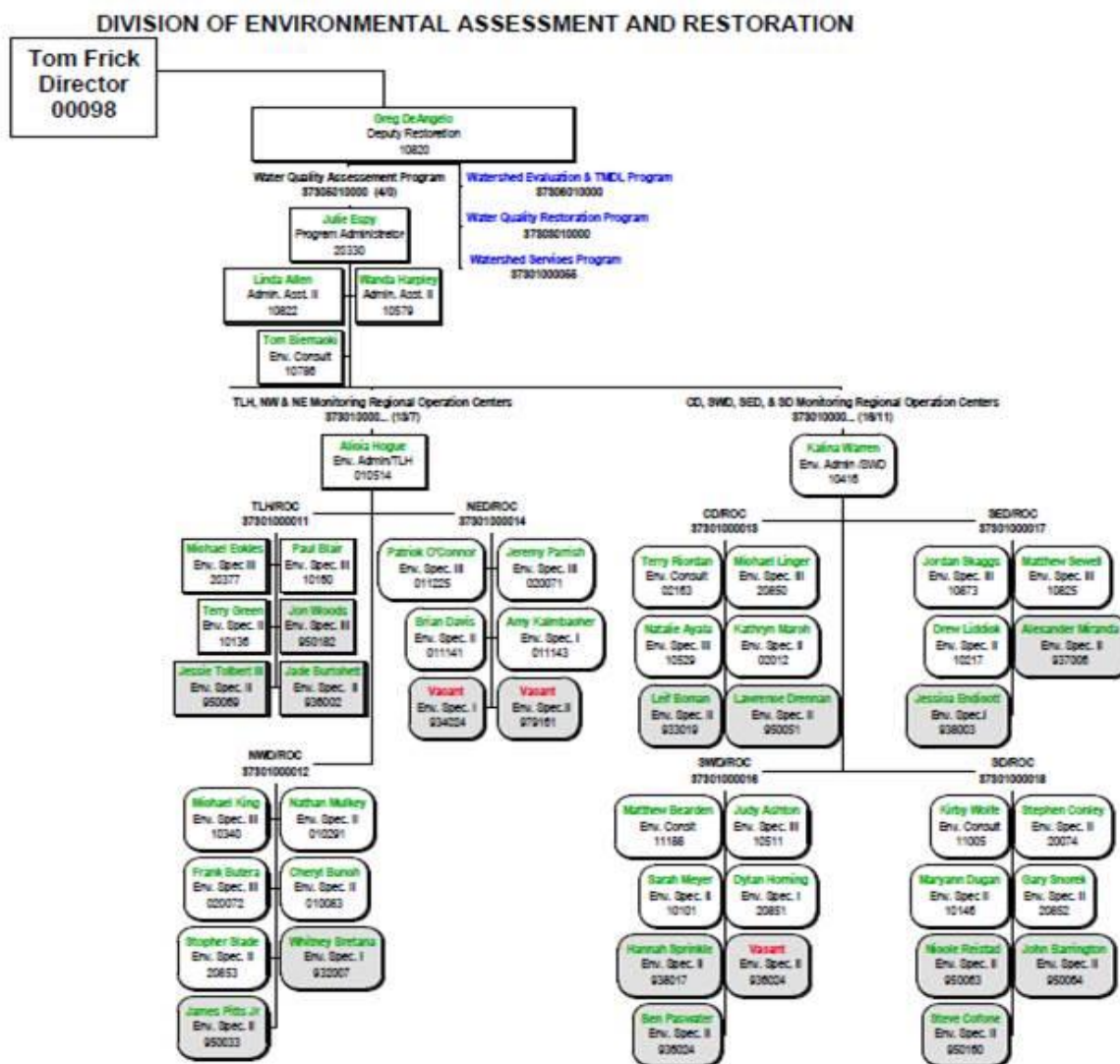
ROC field samplers conducting Lake Vegetation Survey (LVI) assessments must participate biennially in a DEP-sponsored field exercise and produce satisfactory evaluations and scores according to the criteria listed in DEP SOP LVI 1200. Each sampling team must have at least one employee who has demonstrated competency in plant identification by passing the DEP on-line plant test for LVI and participate in the biennial field test.

To perform other assessments or sampling, including Rapid Periphyton Surveys (RPS) and Linear Vegetation Surveys (LVS), field staff has to have a good understanding of biological communities as specified in DEP SOP FS 7000.

ROC sampling personnel are also encouraged to obtain training on Global Positioning Systems (GPS) and become skilled in GIS to perform site recons and have better understanding of watersheds including land use and hydrology. All boat operators must take and pass Class I Watercraft and Trailer Operation and safety training.

Training records are maintained on each employee, by their respective Environmental Administrator, who is trained in skills commensurate with their responsibilities.

Figure 1 - Regional Operation Centers – Organizational Chart



6 Documentation

Documentation of all field and laboratory procedures is a critical data quality objective of the ROCs. Water quality data gathered on these projects are loaded to Watershed Information Network (WIN). Historically, water quality data was loaded to Florida STORET. Results of biological surveys are entered into the Florida Statewide Biological (SBIO2) database. The WIN database is also a source of public information and is used for a variety of purposes. The data must be accurate and meet program objectives to avoid incorrect evaluations and decisions on the State's water resources. All DEP ROC documentation requirements are based on the DEP SOPs cited in the F.A.C. Chapter 62-160, Quality Assurance available at: [Chapter 62-160](#)

6.1 Generation, Retainment and Storage of Records

Record keeping practices are consistent with Rule 62-160.240(1), F.A.C. and FD 1000 of the DEP SOPs. Some field records are generated electronically, however most field and laboratory documentation is generated by filling in paper forms. All records are retained for at least 5 years after the completion of the project. Once final results of water quality data and biological assessments are loaded to WIN or SBIO2, it is stored indefinitely.

All field documentation is recorded on appropriate field sheets per requirements specified in DEP SOP FD 1000. All paper documentation is recorded in waterproof ink (except the Habitat Assessment sketch map, which may be drawn in pencil). Erasing or obliteration of records is not permitted. Corrections are made by marking a single line through the error so that it is still legible, and the initials of the individual performing the correction and the date of the correction are included. All documentation records are required to be legible. Any field records generated electronically are stored on common drive which is backed up daily.

All documentation requirements regarding activities performed by the Florida DEP Laboratory in Tallahassee (container preparation, supplying sampling kits, RQ information, and results of sample analyses, etc.) are generated, retained and stored by appropriate Florida DEP Laboratory personnel. All documentation regarding field procedures, including meter calibration are generated, retained and stored by each ROC team on the DEP network's file transfer protocol folder, \\publicfiles\pubfds\DEAR\WQAPmonitoring.

6.2 Documentation Control and Maintenance

All documentation generated by ROCs is controlled and maintained by each ROC. All documentation includes a revision date or version number to indicate date(s) of use and to ensure the most current version of the documentation form is being used or referenced. Documentation Control and Maintenance procedures are consistent with DEP SOP FD 1000 and Rule 62-160.240 F.A.C.

The use of legal or evidentiary Chain-of-Custody (COC) protocols specified in DEP SOP FD 7000 is not usually required for general sampling and other activities related to Strategic Monitoring Program.

6.3 Types of Documentation/Reports Generated

ROCs generate several types of documentation and reports that are listed below. All documentation contains information and meets requirements specified in DEP SOP FD 1000. Reports to management are consistent with the procedures outlined in FA 3250 of the DEP Field SOPs.

Documentation:

- ✓ field sheets including:
 - sample collection, preservation and transport
 - field measurement records
- ✓ laboratory submittal sheets
- ✓ sample container labels
- ✓ field meter calibration records
- ✓ standards and buffers records
- ✓ equipment maintenance and purchase
- ✓ equipment cleaning procedures
- ✓ inventory sheets

- ✓ documentation for biological sampling and assessment including:
 - physical/chemical characterization
 - stream and river biological habitat assessment
 - lake biological habitat assessment
 - biological aquatic community sampling including:
 - rapid periphyton survey
 - lake vegetation survey
 - stream condition index sampling
 - lake condition index
 - linear vegetation survey sampling
 - algal sampling including harmful algal blooms or mat sampling

Reports:

- ✓ Ecosummaries
- ✓ Other miscellaneous reports (e.g. documentation on follow-ups to complaints)

6.4 Sample Identification and Data Integrity

Procedures to ensure accurate sample identification begin with proper sample nomenclature. Sample custody is consistent with and follows F.A.C. Rule 62-160.240 (field procedures) and DEP SOPs. Once stations and samples are properly named, accurate sample identification continues with the samples in the DEP Laboratory Information Management System (LIMS). The sample identification process continues with consistent documentation procedures involving the sample container labels, field sheets and laboratory submittal sheets as specified in DEP SOP FD 1000. Accurate sample identification and data integrity remains intact throughout the data review and data analysis process. Also, refer to the Florida DEP Laboratory [Quality Manual](#) for specific details regarding sample handling by the laboratory.

6.5 Confidentiality

All records and documents generated by the DEP ROCs (except those associated with private property land owners who do not wish to have their personal information disclosed) are public records and may be subject to disclosure according to the guidelines and exceptions published in Chapter 119 of Florida Statutes.

7 Capabilities

Successful implementation of the water quality monitoring relies on valid data, which begins with proper field procedures including sampling and assessments. Staff are capable of planning, scheduling and collecting high-quality surface water samples and managing all aspects of the associated data review and reporting. The Florida DEP Laboratory in Tallahassee is responsible for all lab analyses performed on the submitted samples. Therefore, ROC teams perform the following activities concerning field procedures:

7.1 Sampling Capabilities and Procedures

Sampling is limited to in-situ collection of bottle samples from surface and ground waters for independent laboratory analyses for variety of parameters including but not limited to: wet chemistry, nutrients, metals, pesticide/herbicides, microbiological analyses, and macroinvertebrate ID. All containers, volumes, holding times and preservation procedures are consistent with FS 2000, FS 1000, Table FS 1000-2 and Tables FS 1000-4 and FS 1000-5 of the DEP Field SOPs. Pre-cleaned sample bottles are provided by the DEP Central Laboratory.

Table 1

Sampling in Surface Waters	Procedure
Physical/Chemical analyses	DEP-SOP-001/01, revision date January 2017, FS 2000 and FS 2100
Microbiology	DEP-SOP-001/01, revision date January 2017, FS 2000 and FS 2100
Benthic Macroinvertebrate	DEP-SOP-003/11, revision date January 2017, SCI 1000
Phytoplankton	DEP-SOP-001/01, revision date January 2017, FS 7100
Phytoplankton Bloom Sampling	DEP-SOP-001/01, revision date January 2017, FS 7110
Periphyton Sampling	DEP-SOP-001/01, revision date January 2017, FS 7200
Algal Mat Sampling for Taxonomic ID or Toxin Analysis	DEP-SOP-001/01, revision date January 2017, FS 7240

7.2 Test Methods

Field procedures, including sampling and assessments performed by ROC employees are listed in Tables 2 and 3.

Table 2

Analyte	Method
pH	DEP-SOP-001/01, revision date January 2017, FT 1100
Specific Conductance	DEP-SOP-001/01, revision date January 2017, FT 1200
Salinity	DEP-SOP-001/01, revision date January 2017, FT 1300
Temperature	DEP-SOP-001/01, revision date January 2017, FT 1400
Dissolved Oxygen	DEP-SOP-001/01, revision date January 2017, FT 1500
Light Penetration	DEP-SOP-001/01, revision date January 2017, FT 1700
Field Continuous Monitoring	DEP-SOP-001/01, revision date January 2017, FT 1900
Total Water Depth	Secchi disk, YSI multi-probe,
Stream Width	Measuring tape
Stream Velocity	Calculation or visual observation

Table 3

Assessment	Method
Stream and River Habitat Assessment	DEP-SOP-001/01, revision date January 2017, FT 3100

Assessment	Method
Lake Habitat Assessment	DEP-SOP-001/01, revision date January 2017, FT 3200
Lake Vegetation Index	DEP-SOP-003/01, revision date January 2017, LVI 1000
Rapid Periphyton Survey	DEP-SOP-001/01, revision date 3/1/2014, FS 7230
Stream and River Linear Vegetation Survey	DEP-SOP-002/01, revision date 3/1/2014, FS 7320

7.3 Equipment

All sampling equipment is consistent with FS 1001 and Tables FS 1000-1 through FS 1000-3 of the DEP Field SOPs.

For surface water sample collection and field testing any combination (or all) of the equipment listed below may be used:

- ✓ Van Dorn sampler (or similar)
- ✓ Secchi disk
- ✓ measuring tape
- ✓ YSI multi-probe (or similar) and all associated standards and buffers
- ✓ GPS equipment
- ✓ additional non-equipment supplies (cleaning materials, buckets, gloves, filters, preservatives, brushes, camera, etc.)

For ground water sample collection and field testing any combination (or all) of the equipment listed below may be used:

- ✓ Flow container
- ✓ Pumps
 - Above-ground pumps
 - Submersible pumps
- ✓ Tubing
- ✓ Lanyards
- ✓ YSI multi-probe (or similar) and all associated standards and buffers
- ✓ Turbidity meters
- ✓ GPS equipment
- ✓ Water level measuring device
- ✓ Watch or other time measuring device
- ✓ additional non-equipment supplies (cleaning materials, buckets, gloves, filters, preservatives, brushes, camera, etc.)

For Stream Condition Index sample collection and habitat assessment performance, any combination (or all) of the equipment listed below may be used:

- ✓ D-frame dipnet with No. 30 mesh with a pole marked in 0.1 m increments
- ✓ collection brush
- ✓ 100-meter measuring tape
- ✓ flagging tape (or similar)
- ✓ stopper
- ✓ GPS equipment
- ✓ additional non-equipment supplies (cleaning materials, buckets, gloves, camera, etc.)

For Rapid Periphyton Survey (RPS), any combination (or all) of the equipment listed below may be used:

- ✓ ruler
- ✓ concave spherical densiometer
- ✓ 100-meter measuring tape
- ✓ flagging tape (or similar)
- ✓ Secchi disk
- ✓ GPS equipment
- ✓ additional non-equipment supplies (cleaning materials, buckets, gloves, camera, etc.)

For Linear Vegetation Survey (LVS), any combination (or all) of the equipment listed below may be used:

- ✓ aquatic and wetland plant identification manuals
- ✓ hand lens
- ✓ frotus
- ✓ 100-meter measuring tape
- ✓ flagging tape (or similar)
- ✓ GPS equipment
- ✓ additional non-equipment supplies (cleaning materials, buckets, gloves, camera, etc.)

For Lake Vegetation Index (LVI), any combination (or all) of the equipment listed below may be used:

- ✓ aquatic and wetland plant identification manuals
- ✓ binoculars
- ✓ frotus
- ✓ water craft
- ✓ GPS equipment
- ✓ LVI maps (have to be prepared in office using, preferably, ArcGIS or MapDirect)
- ✓ Scopes (in office for confirm Plant ID if needed)
- ✓ additional non-equipment supplies (cleaning materials, zip-lock bags, gloves, camera, etc.)

7.4 Sample Handling

Sample collection and handling by ROC employees must meet objectives of each program for which samples are collected (e.g., Strategic Monitoring, BMAP, TMDL, FYIs, special projects) while following requirements specified in the DEP SOPs. All forms are consistent with FD 9000 of the DEP SOPs.

Sampling events are scheduled in the Florida DEP Laboratory LIMS. LIMS generates an "RQ" number (Request ID) for the sampling event, which is linked to each sample bottle requested for the event. Sample submittal forms are also generated by LIMS using this information. Field and laboratory data that are stored in LIMS are linked to that sampling event's RQ number. Data are recorded and stored by unique location/date identifiers.

Sample documentation begins in the Florida DEP Chemistry and Biology Programs with the preparation of sampling kits and the shipment to the ROCs. Each kit contains sample containers, acids used for sample preservation if needed, plastic bags, and submittal forms packed into coolers. The laboratory staff places a label on each container with the request (RQ) number, the test code, a notation if filtration is required, and the preservation method. Once samples are collected by the ROC employees, date and time of sample collection is written on the sample container label and a barcoded label with station identifiers is affixed.

Each sampling event is documented by ROC employees on a field sheet which includes field measurements for pH, DO, conductivity, temperature, Secchi, sample depth, and other field observations (e.g., air temperature, weather conditions, water level) in addition to the information pertaining to the location, date, time, name of samplers, type of sample, matrix and sample preservation. All containers are labeled using an indelible ink pen.

Samples are acid preserved (if applicable) and placed on ice in coolers within 15 minutes of sample collection. Laboratory submittal forms, containing water quality meter data, field sample ID#, date and time of sampling, name of samplers, and preservation information, are completed and shipped overnight to the Central Laboratory with each cooler allowing the laboratory staff to identify each sample container. This information is entered into LIMS and available for loading to WIN through the Data Merge Tool.

Sample analysis completed by the Florida DEP Laboratory is described in the Laboratory Quality manual that can be found at: [Quality Manual](#)

Certain samples (E. coli, Enterococci, fecal coliforms) are analyzed by contract laboratories due to a short holding time. These samples are also scheduled through the Florida DEP Laboratory's LIMS where RQ number is generated. These samples are delivered to a contract laboratory by ROC employees. A laboratory chain-of-custody records are completed and sample containers are properly labeled as noted above. Once samples are delivered to a contract laboratory or shipped to the Florida DEP Laboratory in Tallahassee, sample handling is documented by a respective laboratory staff. Each laboratory provides a signed copy of chain of custody records which documents custody transfer and is kept on ROCs file.

8 Equipment and Instruments

All equipment (and associated standards/buffers) used by ROCs for calibration procedures are based on procedures outlined in the DEP SOPs (DEP-SOP-001/01 FT 1000, FT 1100, FT 1200, FT 1400, FT 1500, FT 1600, and FT 1720) and meet all DEP SOP specifications for accuracy, reproducibility and design.

8.1 Calibration and Standards

Field instrument calibration follows the requirements for frequency and acceptance criteria as outlined in FT 1000, and the FT Series of the DEP SOPs. The specific FT series that are applicable are identified in Part 7.1 [Capabilities and Procedures](#) of this manual.

All standards and buffers used in calibration procedures are documented in a log book and records are maintained on each ROC file by appropriate staff. The acceptability of field supplies and equipment are specified in DEP SOP FC 1001 and 1002, FD 2000, FT 1000 and the FT series of the DEP SOPs. All records are maintained per FT 1000, the FT Series and FD 1000 of the DEP SOPs.

Per FT 1000 and FD 1000, calibration standards and the calibration procedure is traceable to each instrument.

8.2 Equipment Maintenance and Documentation

Preventive and corrective maintenance follow FS 1007, FT 1000, and the FT Series of the DEP SOPs.

All instruments and equipment used for sample collection and calibration procedures are maintained and cleaned on an as-needed basis and all associated documentation regarding maintenance and cleaning is recorded in log books.

All equipment cleaning/decontamination is based on DEP SOPs (DEP-SOP-FS 1001 and FC 1000). All instrument and equipment maintenance is based on requirements made in the individual FT series of the DEP SOPs and manufacturer recommendations.

8.3 Hazardous Waste Disposal

ROCs generate very small amounts of hazardous waste which is usually handled by the Emergency Response Program at each respective ROC office. Waste disposal is consistent with FS 1011 of the DEP SOPs.

9 Data Review and Assessment

The Regional Operation Centers understand the need to evaluate the quality and usefulness of environmental data collected by the Program. Data review and assessment is performed on a continual basis to assure that all field measurements, biological assessment and collected samples meet all applicable DEP SOPs and program objectives. These procedures are based on Data Quality Objectives and Data Quality Indicators established in DEP Directive 972 (QA Directive), and incorporate the concepts and criteria found in DEP's "Process for Assessing Data Usability", DEP-EA-001/07, available at: [Process for Assessing Data Usability](#)

9.1 Quality Control Measures

ROCs use several quality control measures to ensure high-quality data is being collected and analyzed. Quality control samples assess the accuracy and precision of sampling and analytical techniques. The quality control procedures are consistent with FQ 1000 (field blanks and duplicates) and FT 1000 (calibration requirements and acceptance) of the DEP SOPs.

9.1.1 Field Quality Control

ROCs use several field quality control measures to ensure high-quality data are collected and analyzed. These quality control samples assess the accuracy and precision of sampling techniques. The accuracy of field test measurements is reflected in the acceptance criteria for continuing calibrations as specified in the FT series of the DEP SOPs. Additionally, the quality control procedures are consistent with FQ 1000 (blanks, duplicates and other QC samples) and FT 1000 (calibration requirements and acceptance) of the DEP SOPs.

Physical-chemical parameters

- ✓ Blanks - Collected at a minimum of 5% (one in 20 samples) of each reported test result/matrix combination (e.g., fresh waters);
 - For infrequent tests ROCs collect at least one blank per 6 months or 5% whichever is higher;
 - When intermediate sampling equipment is used, than pre-cleaned equipment blank is collected in lieu of field blank; if intermediate equipment is cleaned in the field between sampling sites, than field-cleaned equipment blank is collected.
 - Field blanks are not required for microbiological sampling, biological community, or any of the field parameters such as pH, DO temperature, and specific conductance.

- ✓ Field Duplicate - Collected at a minimum of 5% (one in 20 samples) of each reported test result/matrix combination (e.g., fresh waters);
 - For infrequent tests ROCs collect at least one field duplicate per 6 months or 5% whichever is higher.
- ✓ Quality of analyte-free (DI water) is confirmed by semiannual analysis for all analytes that will be samples within that period.

Biological assessments

- ✓ Stream and River Habitat Assessment (HA)
 - Samplers participate in mandatory training and testing to assure accuracy of assessment (see: 5.4 Employee Credentials and Training)
- ✓ Lake Vegetation Index (LVI)
 - Samplers participate in mandatory training and testing to assure accuracy of assessment (see: 5.4 Employee Credentials and Training)
 - Plants that cannot be ID in the field are brought back to the lab for proper ID; they can also be mailed to the Aquatic Ecology and Quality Assurance Program for ID confirmation.
- ✓ Stream Condition Index (SCI)
 - Field duplicates are collected with frequency of 5% (one in 20 samples)
 - Samplers participate in mandatory training and testing to assure accuracy of assessment (see: 5.4 Employee Credentials and Training)

9.1.2 Laboratory Quality Control Program

Laboratory Quality Control Program is addressed in the Florida DEP Laboratory Quality Manual. ROC employees do not engage in laboratory procedures other than field meter calibrations.

Multi-probe meter calibration is performed in accordance with the appropriate DEP SOPs FT series and manufacturer recommendations. Field meters are calibrated daily for pH, DO, and conductivity; continuing calibration verification (CCV) is completed at the end of each sampling day. A mid-day CCV is also recommended. If a CCV is not within acceptable criteria, all results associated with the CCV are qualified in accordance with Rule 62-160.700. Also see Quality Control Criteria 9.1.3 for field meters, [Table 4](#). Additionally, temperature devices are verified quarterly against the NIST traceable thermometer and depth measuring devices are verified every six months with a meter stick or a metal measuring tape.

9.1.3 Quality Control Criteria

The results for each quality control measure are assessed using specific acceptance criteria.

Field Blanks

It is expected that field blanks will not have any analytes at detectable levels. ROCs qualify sample values if the analyte was detected at or above the method detection limit in both the sample and the associated field blank, equipment blank, or trip blank, and the blank value was greater than 10% of the associated sample value. The value in the blank shall not be subtracted from associated samples. A code "G" is used as specified in F.A.C. 62-160, Quality Assurance Chapter.

Field Duplicate

Field duplicates are not required by the DEP SOPs; however, ROCs collect duplicate samples with a frequency of 5% to measure the variability in the sampling process for all sampling except for Status and Trend Monitoring Networks.

Field Meter Calibration and Calibration Verification Criteria

All calibration and calibration verification results must meet the acceptable criteria stated in the appropriate DEP SOP-001/01, revision date January 2017, which are listed in Table 4, below. The accuracy of the field test measurements is reflected in the acceptance criteria for continuing calibrations as specified in the FT series of the DEP SOPs. If data are collected using multi-parameter meter that fails to meet calibration verification acceptance criteria, the ROC assigns a "J" qualifier to those data, and adds a comment describing which calibration verifications failed to meet the acceptance criteria.

Table 4

Parameter	Method	Calibration Acceptance Criteria	Calibration Verification Acceptance Criteria
pH	FT 1100	± 0.2 unit, slope > 90%	± 0.2 unit
Specific Conductance	FT 1200	± 5%	± 5%
Dissolved Oxygen	FT 1500	± 0.3 mg/L	± 0.3 mg/L
Temperature	FT 1400	NA	± 0.5 °C
Depth Measuring Device	NA	NA	± 10% for electronic devices ± 5% for Secchi or weighted line

9.2 Raw Data

The field sheets, other field forms (e.g., LVI, HA) and laboratory calibration logs shall be the source for all original/raw data.

9.2.1 Data Reduction

Field measurements from the multi-probe YSI meter or other meters are recorded on field sheets. Field data, such as dissolved oxygen (mg/L), pH, conductivity, and temperature is entered into LIMS by laboratory staff. Other field measurements, such as Secchi depth, total depth, dissolved oxygen (% saturation), and any parameter that is not entered into LIMS are entered into the Data Merge Tool by ROC staff. LIMS field data, sample dates and times, and station IDs are verified by a second employee for accuracy. Once all data has been verified, an electronic data deliverable is generated and loaded into the WIN database. Data verification is tracked by each ROC. All data management is consistent with FD 1200 of the DEP SOPs.

All biological data are recorded on appropriate field forms and then entered in SBIO2.

Any corrections in sample documentation should be made by the data recorder, or, if necessary, by other personnel. Corrections are to be made by striking through the error with a single line, which is initialed by the employee making correction. Any corrections made to documents must

show date of correction. If appropriate, the employee will document the changes with comments. All entries will be made with ballpoint pens.

9.2.2 Data Verification

Physical-chemical parameters

Once the laboratory and field data are loaded to WIN, the data is retrieved, verified for accuracy and reviewed against blanks and duplicates. All errors and corrective action are documented and saved electronically.

Biological Data

All biological data, including HA, LVIs and LVSSs, is entered into SBIO2 by an analyst while a second analyst verifies the content and accuracy of each entry. Once this process has been completed, all entries are marked complete in SBIO2 which results in community variables and scores being calculated and stored. All data are stored in an Oracle database on the DEP Server.

9.2.3 Data Validation

There are several levels of data validations for samples and field data collected by ROCs. It starts with each team member involved in water quality sample collection, field measurement, or biological assessment reviewing his/her records for completeness and correctness. Then, each ROC team has a system of checks before data is entered to the Data Merge Tool, WIN, or SBIO2

Water Quality Data

The process of transferring data from LIMS into the WIN database includes an intermediate verification process. The WIN program electronically reviews each data set for required data quality elements. If there are errors or omissions detected the data will not be uploaded into WIN until such items are corrected.

Biological Data

All data, including plant data identified during LVIs is verified as described in 9.2.2 above, and scores are calculated and stored electronically.

Once results of sample analyses by the Florida DEP Laboratory are available, final data is reviewed for its completeness and if field QC samples are within acceptable limits. Data that do not meet the monitoring objectives are resampled, whenever possible. All data generated by ROCs is validated again by the Watershed Assessment Section for data collected for the Strategic Monitoring Plan, Watershed Monitoring Section for Status and Trends Networks, and other programs for which the data is collected.

9.3 Corrective Actions

Corrective action procedures are consistent with FA 3000 of the DEP SOPs. All personnel is responsible for assessing quality control measure for which they are responsible and initiating corrective action, if needed. Each sampling team is responsible for the internal data reviews and implementation of corrective actions for data non-conformance incidents. Additionally, WAS Program staff evaluates all results against program Data Quality Objectives. Specific QC measures that initiate corrective action and type of action includes:

- Sample results cannot be used in assessment and must be resampled when reported with a qualifier "Q", except for microbiology samples if holding time was not exceeded past 24 hours;
- Sample results cannot be used in assessment and must be resampled when reported with a qualifier "L", "O", "V", "Y", or "?".
- All results reported with a qualifier "J" are reevaluated to confirm if they meet Program Objectives;
- Field blanks that show detected concentration of any of the analytes are evaluated. Associated samples results are qualified with a qualifier "G" and determination is made if results meet Program Objectives. If not, samples are recollected;

Systemic problems are addressed through identification of a problem and development of preventative steps. Several communications have been issued addressing corrective actions and preventative actions. They can be found at: [QC SMP Guidance folder](#)

Notification of personnel of problems and corrective actions can be on several levels. They include oral communication via teleconference or videoconference and written communication between EAs, Team Leaders, PA and WAS.

9.4 Deviations

Every effort is made to collect all data in accordance with all applicable DEP SOPs. Any unusual field conditions or other observations that do not conform to accepted practices or policies are documented and reported on field sheets and/or other field records with final data being qualified per Rule 62-160.700.

9.5 Audits

The EAs will conduct audits of ROC teams. Field procedures including meter calibration, sample collection and record maintenance will be reviewed at least annually to ensure compliance with quality assurance plan and applicable DEP SOPs. The results of audits will be distributed to Program Administrator and all affected individuals. The Team Leads will oversee responses to audits and recommend corrective and preventive actions or other measures if necessary.

All audits are conducted according to the requirements of FA 4200 of the DEP SOPs.

10 Consumer Relations

10.1 Review of Proposed Work

Strategic Monitoring Plans are developed annually by the Watershed Assessment Section for all ROCs. Consideration is given to the adequate field personnel and their capabilities and qualifications to accomplish required sampling. Before the sampling plan is completed, a meeting is held with ROC EAs and local Team Leaders to discuss sampling schedules. Additionally, the DEP Laboratory is consulted prior to commencement of any new work to ensure that the laboratory has the appropriate facilities and resources to perform such work.

10.2 Complaints

Every effort will be made to resolve complaints in the best manner possible. Any resolution must consider all quality, facility and personnel requirements and, if possible, measures to prevent reoccurrences of the situation.