



QUALITY PLAN

for

State of Florida

Department of Environmental Protection

Regional Operation Centers

November 2022

Quality Plan
for
State of Florida Department of Environmental Protection
Division of Environmental Assessment and Restoration
Water Quality Monitoring Program
Regional Operation Centers

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Regional Operation Centers
November 2022

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.

Alicia Hogue, Program Administrator

Michael King, Environmental Administrator NW/NE/Tallahassee

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

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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. 9, April 2020).

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 (F.A.C., 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 ROCs perform biological assessments and collect water samples from lakes, streams/rivers, other surface water bodies, sediment from lakes and ground water wells throughout Florida. This Quality Plan provides the procedures that are used to ensure that data generated by the ROCs is of verifiable quality and meet 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 ROCs' 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 QMP;
- Ensure that individuals are 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 Aquatic Ecology and Quality Assurance Section (AEQAS).

4 Ethics Statement

All employees of the ROCs are held to high professional ethical standards in the performance of their duties. All new employees are required to complete the New Employee Orientation training attesting to their commitment to honesty and integrity in performance of their duties. In addition, all employees are required to attend an annual online ethics training refresher 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 Monitoring Program (WQMP).. See ROCs organizational chart in Figure 1.

The main function of ROCs involves field work including collection of surface and ground water samples, sediment samples as well as biological assessments of watersheds throughout Florida. Most of the field work is performed in support of Status and Trend Networks (S&T) and the Strategic Monitoring; however, we also support sampling needs of other DEP Programs like Basin Management Action Plans (BMAP), Total Maximum Daily Load (TMDL), Bioassessment, and National Pollution Discharge Elimination System (NPDES) programs, and respond to public complaints related to water quality issues. Quality manuals for other programs can be accessed on DEP website at <https://floridadep.gov/dear/quality-assurance/content/quality-plans>

The WQMP is headed by the Program Administrator (PA) who is responsible for the Watershed Monitoring Section (WMS) 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 two Environmental Administrators (EAs) who manage all direct oversight of the development and implementation of the Program's monitoring activities.

Environmental Administrators who have direct supervisory responsibilities over ROC 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 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 ROC staff participate in an on-going data review process to confirm if generated data meet objectives of the Program. If any data do 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) collected by ROCs other than Tallahassee. Whenever possible, these samples are submitted to contracted commercial laboratories in order to meet short holding times.

5.1 Responsibilities of Key Personnel

There are seven ROCs that comprise statewide sampling coverage: Northwest (NW), Tallahassee, Northeast (NE), Southwest (SW), South (S), Central (CE), and Southeast (SE). 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 quarterly 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 Alicia Hogue, Program Administrator

Directs the activities of the Water Quality Monitoring Program (WQMP), which is responsible for administration of 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 Michael King, Environmental Administrator, North Florida ROCs – Northwest/Northeast/Tallahassee

Manages all aspects of monitoring activities for the WQMP in the NW (Pensacola), Tallahassee and NE (Jacksonville) regional offices. Serves as a Quality Assurance Officer (QAO) for NW, Tallahassee and NE ROCs. Ensures that all aspects of WQMP's monitoring for the state's S&T, SMP, 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., algal bloom reports, 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 ground water. Sediment samples are collected mostly from lakes. Biological assessments may include taxonomic analysis of freshwater, estuarine and marine flora. Participation in DEP training and proficiency demonstrations are required to conduct water quality data collection and specialized floral and faunal biological assessments, including the Stream Condition Index (SCI), Rapid Periphyton Survey (RPS), Lake Vegetation Index (LVI), Linear Vegetation Survey (LVS), and Stream and Lake Habitat Assessments (HA).

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, South Florida ROCs – Southwest/South/Central/Southeast

Manages all aspects of monitoring activities for the WQMP in the SW (Tampa), C (Orlando), SE (Ft. Pierce) and S (Ft. Myers) regional offices. Serves as a QAO for SW, Central, SE and South ROCs. Ensures that all aspects of WQMP's monitoring for the state's S&T, SMP, 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., algal bloom reports, 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 ground water. Sediment samples are collected mostly from lakes. Biological assessments may include taxonomic analysis of freshwater, estuarine and marine flora. Participation in DEP training and proficiency demonstrations are required to conduct water quality data collection and specialized floral and faunal biological assessments, including the SCI, RPS, LVI, LVS, and Stream and Lake HAs.

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:
Nia Wellendorf, Program Administrator

5.4 Employee Credentials and Training

All ROC employees are highly skilled and knowledgeable in water resource monitoring. Most have a 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 standard operating procedures (SOPs) that can be found at: [DEP SOPs](#). Special attention is paid to SOPs addressing collection of surface and ground water samples, as well as sediment samples, field documentation, calibration of field meters, and field QA requirements.

All new employees are trained on sample collection techniques internally by experienced staff. In 2016, an apprenticeship program for water quality sampling was developed for field personnel in DEAR. The purpose of the Water Quality Sampling Apprenticeship Program is to provide a consistent, cost effective framework for training, evaluating, and authorizing staff on the required field methods used to support the DEP/DEAR mission. All new employees use checklists for a specific SOPs to track training tasks and document required training in Training Logs. Apprentice Checklists are available for different SOPs that encompass field activities that include: 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 projects at a minimum of three sites and pass an internal sampling proficiency audit to demonstrate competence. The Apprenticeship Program information is located on SharePoint and can be found [here](#). Every three years, sampling personnel are required to take a series of on-line tests to assure their continued proficiency and knowledge of DEP SOPs.

Whenever possible, field staff are encouraged to attend SOP or Bioassessment trainings offered by AEQAS, participate in ROC meetings, and attend other training events or workshops. At a minimum, ROC staff must attend a real-time training or review recorded trainings, presentations, or documents for the following topics:

- Algal Bloom Response Sampling (take a training annually)
- Field Safety Training (new employee listed to a recorded training and take a quiz every three years)
- Status and Trend Networks Sampling Manual (new employees participate in training and take a refresher class every 5 years with the Watershed Monitoring Section (WMS))
- SMP Sampling Guidance Documents (review annually); new SMP plan and all documents are found in [\\publicfiles\pubfds\DEAR\WQAPmonitoring\StrategicMonitoring](#)
- ROC Quality Plan (review annually)

All samplers performing 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 participation in field sampling). A biological assessment training class is provided by the Aquatic Ecology and QA Section (AEQAS).

New ROC field staff conducting the SCI method must train with qualified DEP staff (via workshops and participating in field sampling), pass an online SCI knowledge test, and field performance test (audit) to demonstrate proficiency. Training should be conducted using the SCI Training Checklist (SCI 1100) and Event Log (see the link under HA) by trainers who are in pass status for the SCI. SCI audits are administered by AEQAS or Kalina Warren. At all times, a minimum of one field staff from each sampling team must be in pass status to collect a SCI sample. After passing the initial performance audit, field staff must pass a refresher audit every 5 years to remain in pass status.

New ROC field staff performing Stream HAs 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 benchmark testing is conducted at select streams and rivers located throughout the state, and sites change every two years or as needed. All field staff 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 HA.

ROC field staff conducting 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 proficiency 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 RPS and LVS, field staff must have a good understanding of biological communities as specified in DEP SOP FS 7000. Online tests for these assessments are required, programmatically, by the ROC staff.

Equipment and technology that require training and expertise by ROC staff include:

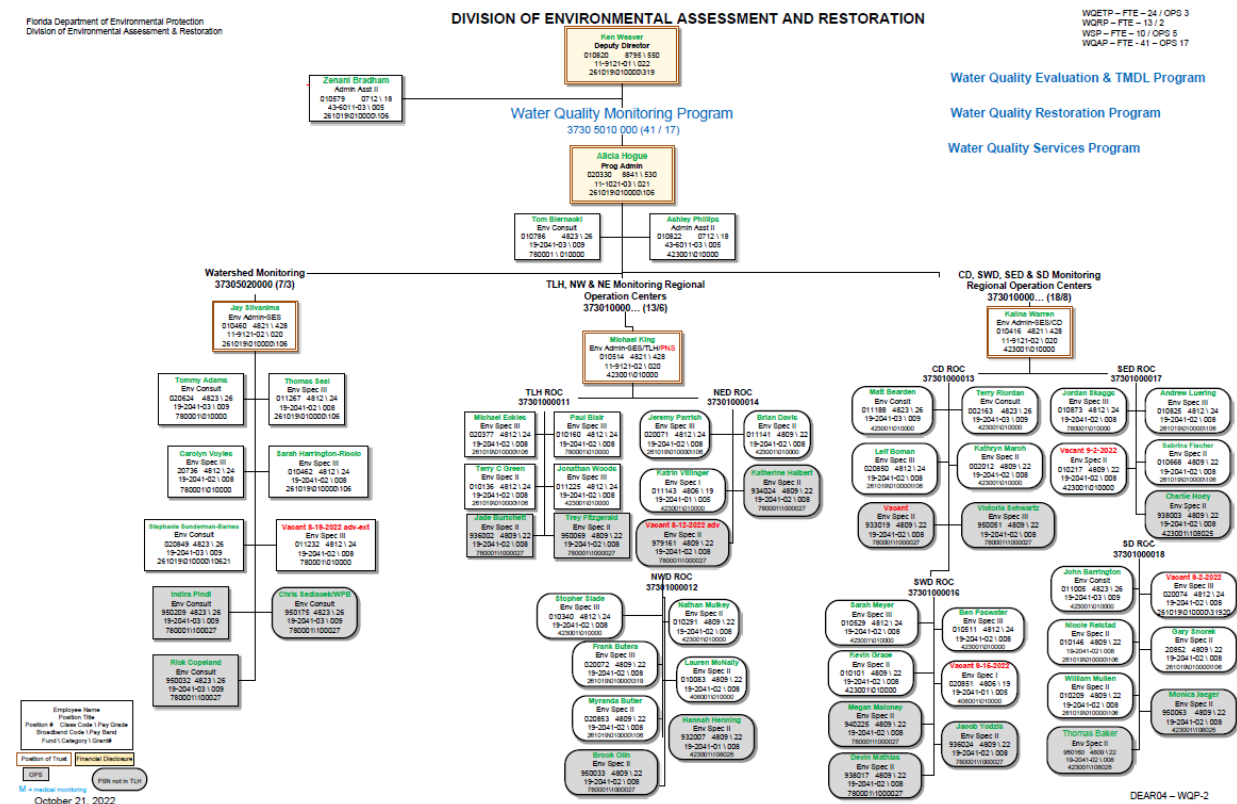
- Field Electronic Devices like Tablets or Smart Phones
- Global Positioning Systems
- Mapping applications
- Boats and trailers
- State vehicles
- YSI multi-probe meters
- Hach turbidity meters
- Groundwater pumps
- Generators
- Other surface water quality monitoring devices

Training and competence with mapping applications (e.g. Geographic Information System, Google Earth, MapDirect) is required to perform site reconnaissance and provide an understanding of watersheds, land use, and hydrology. All boat operators must take and pass Class I Watercraft and Trailer Operation and Safety Training. Training on all equipment and technology is provided by experienced ROC staff by participation in field sampling and the WMS Status and Trend Networks Sampling Training. Training records are maintained on each employee, by their respective Environmental Administrator, who is

trained in skills commensurate with their responsibilities. Instructional materials and videos are archived at an internal [SharePoint site](#).

Organizational Chart

Water Quality Monitoring Program



6 Documentation

Documentation of all field and laboratory procedures is a critical data quality objective of the ROCs. 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](#). ROC staff enter and store collected, analyzed, and documented biological assessment data into the internal Florida Statewide Biological (SBIO2) database. Ambient water quality data is uploaded and stored into the public database, Watershed Information Network (WIN). The WIN database is used by the public, DEP, and other agencies to access water quality results for a variety of purposes. Historically, water quality data were uploaded to Florida STORET.

6.1 Generation, Retention 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. Most field records are generated electronically, and some field and laboratory documentation is generated by filling in paper forms. All records are retained for at least 5 years after the data

generation or completion of the records. Once the results of water quality data and biological assessments are loaded to WIN and SBIO2, respectively, they are stored indefinitely.

All field documentation is recorded on field sheets (either paper or electronic) 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 FTP and file servers, depending on the project, and are backed up daily.

All documentation requirements regarding activities performed by the Florida DEP Laboratory in Tallahassee (container preparation, supplying sampling kits, laboratory scheduling information, and results of sample analyses, etc.) are generated, retained and stored by Florida DEP Laboratory personnel. All documentation regarding field procedures, including meter calibration, are generated, retained and stored by each ROC.

6.2 Documentation Control and Maintenance

All documentation generated by field staff are controlled and maintained by their respective ROC. Each ROC creates and reviews all documentation associated with any water quality monitoring project and archives in an accessible location as determined by the program requesting data collection. 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 sampling conducted by ROCs but would be employed if ROC staff are helping DEP District Offices with enforcement cases.

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 of field equipment
- ✓ documentation for biological sampling and assessment including:
 - physical/chemical characterization form
 - stream and river biological habitat assessment form

- lake biological habitat assessment form
- biological aquatic community sampling including:
 - rapid periphyton survey form
 - lake vegetation survey form
 - stream condition index form
 - lake condition index form
 - linear vegetation survey form
 - algal sampling including harmful algal blooms or mat form

Reports:

- ✓ ecosummaries
- ✓ other miscellaneous reports (e.g. documentation on follow-ups to public complaints or inquiries)

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. Monitoring locations (stations) are either named from historical station nomenclature or the required conventions of the project for which the sampling is being conducted. Sample bottles are provided by the DEP laboratory with laboratory labels that provide the following: laboratory request number, bottle group, preservation information, and analytical test code(s). Station and sample bottle labels are generated by ROCs for some projects (e.g., SMP, S&T). Adhesive labels are affixed to paper field and laboratory submittal sheets while a QR code is used within electronic forms. A field identification, station identifier, and collection date and time is recorded on the sample container label. Field sheets and laboratory submittal sheets include a field identification, station identifier, collection date and time, name of who performed each task (e.g. documentation, water quality measurements), analytical tests collected, preservation information, and bottle group(s). A field identification is applied to sample bottle(s) and field records to ensure sufficient linkage between the samples and documentation, per 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 ROCs (except those associated with private property 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 water quality monitoring relies on valid data collection beginning with DEP SOP accepted field procedures that include field testing, sample collection, and biological assessments. Staff are capable of planning, scheduling, and collecting high-quality surface and ground water and sediment samples while managing data review and reporting. The Florida DEP Laboratory is responsible for all lab analyses performed on the submitted samples, except for contracted microbiological samples. ROC teams carry out the activities in sections 7.1 – 7.4 concerning field procedures.

7.1 Sampling Capabilities and Procedures

Sampling encompasses in-situ collection of bottle samples from surface and ground waters for independent laboratory analysis for a variety of parameters including but not limited to wet chemistry, nutrients, metals, pesticide/herbicides, microbiological analyses, and algal and macroinvertebrate identification (surface water only). All containers, volumes, holding times, and preservation procedures are consistent with FS 1000, FS 2000, Table FS 1000-2, Tables FS 1000-4, and FS 1000-5 of the DEP SOPs (Table 1). Pre-cleaned sample bottles are provided by the Florida DEP Laboratory. For sampling capabilities in ground waters and sediments see Quality Manual for Watershed Monitoring Section, Chapter 7.1. For algal bloom response sampling, the sampling approaches described in the algal bloom response training presentations must be followed, (see: http://publicfiles.dep.state.fl.us/DEAR/DEARweb/HAB_Training/) in addition to DEP SOPs provided in this section.

ROC Sampling capabilities in surface waters are listed in Table 1.

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
Stream Condition Index (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 and internal Lab SOP AB-17
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 conducted 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

Analyte	Method
Turbidity	DEP-SOP-001/01, revision date January 2017, FT 1600
Light Penetration	DEP-SOP-001/01, revision date January 2017, FT 1700
Total Water Depth	Secchi disk, YSI multi-probe, meter stick or marked dipnet
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
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-001/01, 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:

- ✓ Dipper
- ✓ Extension pole with sample bottle attachment point
- ✓ Van Dorn sampler (or similar)
- ✓ Secchi disk
- ✓ Measuring tape
- ✓ LI-COR
- ✓ YSI multi-probe meter (or similar) and associated standards and buffers
- ✓ GPS device
- ✓ Affiliated supplies (cleaning materials, buckets, gloves, syringes, filters, preservatives, brushes, camera)

For ground water and sediment sample collection and field testing equipment see [Quality Manual for Watershed Monitoring Section, Chapter 7.3](#)

For SCI sample collection and HA observations, 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)
- ✓ Stopwatch

- ✓ GPS device
- ✓ Affiliated supplies (cleaning materials, buckets, gloves, camera)

For 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 device
- ✓ Affiliated supplies (cleaning materials, buckets, gloves, camera)

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

- ✓ Aquatic and wetland plant identification manuals
- ✓ Binoculars
- ✓ Hand lens
- ✓ Frotus
- ✓ Watercraft
- ✓ GPS device
- ✓ LVI maps (prepared with ESRI ArcGIS, Google Earth, or MapDirect) following DEP-SOP-003/01.
- ✓ Scopes (in office to confirm plant identification, if needed)
- ✓ Affiliated supplies (cleaning materials, zip-lock bags, gloves, camera)

7.4 Sample Handling

Sample collection and handling by ROC staff must meet objectives of each program for which samples are collected (e.g., Strategic Monitoring, S&T, BMAP, TMDL, Fifth Year Inspections, Reference Streams and Lakes, special projects) while following requirements specified in the DEP SOPs. All forms are consistent with FD 9000.

Sampling events are scheduled in the Florida DEP Laboratory LIMS. LIMS generates a laboratory request "RQ" number (Request ID) for the sampling event, which is linked to each sample bottle requested for the event. Laboratory submittal forms are also generated through LIMS using the Request ID. 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/time identifiers.

Samples are scheduled in LIMS using the following Project Names:

- BLOOM-RESP – Water quality and biological monitoring conducted in response to algal bloom reports
- BMAP - Water quality and biological monitoring conducted to assess measurable impact from restoration activities

- LAKESREF - Water quality and biological monitoring from minimally disturbed (reference) lakes used to establish water quality and plant community expectations for Florida lake regions
- SCIREF - Water quality and biological monitoring from minimally disturbed (reference) streams used to establish water quality and plant community expectations for Florida stream regions
- SPRINGS – Quarterly water quality monitoring conducted by 21FTLHR to assess the trends at select springs
- SPRINGS FA – Water quality monitoring conducted to measure impact from restoration activities in springs
- SMP - Strategic Monitoring Program to assist in assessing the health of surface waters by conducting hydrological and biological watershed-based monitoring activities
- STATUS – Status Monitoring Network
- GW-TREND – Ground Water Trend Monitoring Network
- SW-TREND – Surface Water Trend Monitoring Network

Other projects are used as needed for other sampling objectives (e.g., FY15, hurricane response, region-specific projects not associated with BMAPs).

Sample documentation begins in the Florida DEP Chemistry and Biology Programs with the preparation of sampling kits and the shipment to the ROCs. The laboratory staff places a label on each container with the Request ID (RQ), the test code, a notation if filtration is required, and the preservation method. Once samples are collected by the ROC employees, the sample collection date and time is written on the sample container label and a barcoded label with station identifiers is affixed.

Sampling events are documented by ROC staff using ESRI Survey123 and Field Maps applications on an electronic device (Samsung Galaxy Tab Active2 but are being replaced with iPhones and iPods/iPads). Electronic field sheets are programmed to include data entry fields for field measurements (pH, DO, specific conductivity, temperature, Secchi, sample depth) and ambient field observations (e.g., air temperature, weather conditions, water level) in addition to the information pertaining to the location, date, time, name of field staff, laboratory test, matrix and sample preservation. All containers are labeled with date and time using an indelible ink pen. When use of electronic field forms are not available, a paper version of the field form is implemented. The paper field forms provide the same information as electronic forms.

Samples are acid preserved and pH-checked, if applicable, and placed on ice in coolers within 15 minutes of sample collection. Coolers are shipped overnight, or hand delivered (Tallahassee ROC only) to the Florida DEP Laboratory. Submittal forms containing water quality measurements, field ID#, date and time of sampling, name of field staff, and preservation information, are emailed to the laboratory receiving room and linked to sample containers by the laboratory request (RQ). This allows the laboratory receiving staff to identify each sample container and enter RQ information for each sample along with field measurements into LIMS.

Sample analysis completed by the Florida DEP Laboratory is described in the Laboratory's 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 the RQ number is generated. These samples are delivered to a contract laboratory by ROC staff. Laboratory chain of custody (COC) records are completed and sample containers are properly labeled as noted in the above paragraph. Once samples are delivered to a contract laboratory or

shipped to the Florida DEP Laboratory, sample handling is documented by a respective laboratory staff. Each laboratory provides a signed copy of COC records which documents custody transfer and is kept on the ROC's file. Samples that are shipped overnight to the Florida DEP Laboratory and do not meet holding time requirement are reported with a qualifier "Q".

8 Equipment and Instruments

Field testing equipment (YSI multi-probe and associated standards/buffers) used by ROCs that require calibration 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. Water quality sample collection equipment operated by ROC staff that does not involve calibration to conduct surface and groundwater quality monitoring are also listed in section 7.3.

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 logbook 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. Per FT 1000 and FD 1000, calibration standard lot numbers and the calibration procedure are recorded and linked to each instrument. All records are maintained per FT 1000, the FT Series and FD 1000 of the DEP SOPs.

8.2 Equipment Maintenance and Documentation

There are 2 categories of equipment that the ROCs employ: Field testing and water quality sample collection equipment. Preventive and corrective maintenance of field-testing equipment follows FS 1007, FT 1000, and the FT Series of the DEP SOPs as well as the manufacturer recommendations. Field testing instrumentation used are calibrated daily per programmatic guidance and maintained and cleaned on an as-needed basis. Water quality sample collection equipment requires a cleaning reagent, such as the detergent, Luminol (DEP SOP FC 1000) and analyte-free water for rinsing. All equipment cleaning/decontamination follows DEP SOPs (DEP-SOP-FS 1001 and FC 1000). Associated documentation regarding maintenance and cleaning is recorded in logbooks.

8.3 Hazardous Waste Disposal

ROCs generate very small amounts of hazardous waste which is handled by the Emergency Response Program at each respective ROC office, except with the North Florida ROCs. The North Florida ROCs allow the Florida DEP Laboratory to dispose of hazardous waste. Waste disposal is consistent with FS 1011 of the DEP SOPs.

9 Data Review and Assessment

The ROCs evaluate the quality and usefulness of environmental data collected by the Program. Review and evaluation is completed on each recorded observation to ensure that all field measurements, biological assessments, and water quality samples meet all applicable DEP SOPs and program objectives. Analytical results are evaluated for qualifiers to determine if re-sampling is necessary and/or

contamination is present. 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 apply several quality control measures to ensure high-quality data are 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 (blanks and duplicates) and FT 1000 (calibration requirements and acceptance) of the DEP SOPs.

9.1.1 Field Quality Control

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.

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 an intermediate sampling device is used, an equipment blank is collected in lieu of a field blank. If an intermediate device is not cleaned in the field, a pre-cleaned equipment blank is collected; if intermediate equipment is cleaned in the field between sampling sites, a field-cleaned equipment blank is collected.
 - Field blanks are not required for microbiological sampling, biological community, or any of the field measurements such as pH, DO, temperature, and specific conductance.
- ✓ Quality of analyte-free (deionized [DI] water is confirmed by semi-annual analysis for all analytes that will be samples within that period.

Biological assessments

- ✓ Stream and River Habitat Assessment (HA)
 - ROCs participate in mandatory training and testing to ensure accuracy of assessment (see: 5.4 Employee Credentials and Training)
- ✓ Lake Vegetation Index (LVI)
 - ROCs participate in mandatory training and testing to ensure accuracy of assessment (see: 5.4 Employee Credentials and Training)
 - Plants that cannot be identified in the field are brought back to the laboratory for proper; they can also be mailed to AEQAS for confirmation.
- ✓ Stream Condition Index (SCI)
 - ROCs participate in mandatory training and testing to ensure accuracy of assessment (see: 5.4 Employee Credentials and Training)
- ✓ Rapid Periphyton Survey (RPS)
 - ROCs participate in mandatory training and testing to ensure accuracy of assessment (see: 5.4 Employee Credentials and Training)
- ✓ Linear Vegetation Survey (LVS)
 - ROCs participate in mandatory training and testing to ensure accuracy of assessment (see: 5.4 Employee Credentials and Training)

9.1.2 Laboratory Quality Control Program

The 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 DEP SOPs FT series and manufacturer recommendations. Field meters are calibrated daily, per programmatic guidance, for pH, DO, and conductivity, and an initial calibration verification (ICV) is conducted; continuing calibration verification (CCV) is completed at the end of each sampling day. A mid-day CCV is also recommended. The initial calibration verifications (ICV) and continuous calibration verifications (CCV) must produce quantitative and chronological brackets for the field measurements (turbidity, pH, specific conductivity, salinity, and temperature) with the exception of DO with only chronological brackets required per DEP SOP FT 1000. If a CCV is not within the acceptable criteria in DEP SOP FT 1000, 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](#). Temperature devices are verified quarterly against a NIST traceable thermometer and depth measuring devices are verified every six months with a meter stick or a metal measuring tape.

Light attenuation is measured with Licor meter for Coastal Charlotte Harbor Monitoring Network (CCHMN). Sensors of light attenuation meter are sent every two years to LI-COR for manufacture calibration. Before each sampling event, the light meter underwater sensors are validated by taking simultaneous readings in the air and verifying both readings are within 5% of each other.

9.1.3 Quality Control Criteria

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

Field Blanks

It is expected that field blanks will not have any analytes at detectable levels. ROCs qualify sample result 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
- ✓ 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 "G" qualifier is accompanied with the sample result as specified in F.A.C. 62-160, Quality Assurance Chapter. Field blanks are batched with the samples collected on the same day by the same field team.

Field Duplicate

Field duplicates are not required by the DEP SOPs;

Field Meter Calibration and Calibration Verification Criteria

All calibration and calibration verification results must meet the acceptance criteria stated in DEP SOP FT 1000, revision date January 2017, which are listed in Table 4. If pre- and post-sampling verifications meet these acceptance criteria, the field measurements are within an acceptable level of accuracy. If data are collected using a multi-probe 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
Turbidity	FT 1600	0.10-010 NTU: ± 10% of standard value 11-40 NTU: ± 8% of standard value 41-100 NTU: ± 6.5% of standard value >100 NTU: ± 5% of standard value	0.10-010 NTU: ± 10% of standard value 11-40 NTU: ± 8% of standard value 41-100 NTU: ± 6.5% of standard value >100 NTU: ± 5% of standard value

9.2 Raw Data

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

9.2.1 Data Reduction

Strategic Monitoring Plan (SMP) and Special Projects

Field measurements from multi-probe field meters and other meters are recorded on electronic or paper field sheets. Field measurements, such as dissolved oxygen (mg/L), pH (SU), conductivity (µmhos/cm), and temperature (°C) are entered into LIMS by laboratory staff upon sample submittal. Other field measurements, such as Secchi depth (m), total depth (m), dissolved oxygen (% saturation), and any parameter or additional data (e.g., field measurements from multiple depths) that is not entered into LIMS is entered into the Data Merge Tool (DMT) by ROC staff. LIMS field data, sample dates and times, and station IDs are verified by a second employee for accuracy. Once all data have 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.

ROCs load data into the WIN within the following Project IDs, which represent most of the ROC monitoring projects. If data are collected for SMP in addition to another project (e.g., BMAP), data is entered under the other project's ID. Project IDs not listed here may be used if sampling purpose differs from these.

- BLOOM-RESP – Water quality and biological monitoring conducted in response to algal bloom reports
- BMAP - Water quality and biological monitoring in support of the Department's Basin Management Action Plans
- LAKESREF - Water quality and biological monitoring from minimally disturbed (reference) lakes used to establish water quality and plant community expectations for Florida lake regions
- SCIREF - Water quality and biological monitoring from minimally disturbed (reference) streams used to establish water quality and plant community expectations for Florida stream regions
- SPRINGS – Quarterly water quality monitoring conducted by 21FTLHR to assess the trends at select springs
- SPRINGS FA – Water quality monitoring conducted to measure impact from restoration activities in springs
- SMP - Strategic Monitoring Program to assist in assessing the health of surface waters by conducting hydrological and biological watershed-based monitoring activities

Sometimes partner agencies collect samples for algal bloom response. In these cases, the ROC that coordinated that sampling effort with the partner agency will load the data into WIN under its own OrgID and indicate the agency partner that conducted the sampling as the Sampling Agency.

Biological assessment data are recorded on field forms and then entered in the Statewide Biological Database 2 (SBIO2).

Any corrections in sample documentation should be made by the data recorder, or, if necessary, by other personnel involved in the sampling event. Corrections are made by striking through the error with a single strikethrough and initialed by the employee making the correction. Any corrections made to documents must show date of correction. If appropriate, the employee will document the changes with comments. All entries are made with indelible ink.

Status and Trend Monitoring Networks

Refer to [Quality Manual for Watershed Monitoring Section, Chapter 9.2.1](#)

9.2.2 Data Verification

Physical-chemical parameters

Strategic Monitoring and Special Projects

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

Status and Trend Monitoring Networks

Refer to [Quality Manual for Watershed Monitoring Section, Chapter 9.2.2](#)

Biological Data

Biological assessment data for HA, RPS, LVI, and LVS, 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. SCI data is entered and verified by the biology lab staff. 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 measurement data collected by ROCs. It starts with each employee involved in water quality sample collection, field measurement recording, or biological assessment by reviewing his/her records for completeness and correctness. Then, each ROC has a system of checks before data is entered to the Data Merge Tool (DMT), WIN, or SBIO2.

Water Quality Data

Strategic Monitoring and Special Projects

The process of transferring data from DMT 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.

Status and Trend Monitoring Networks Water Quality Data

Refer to [Quality Manual for Watershed Monitoring Section, Chapter 9.2.3](#)

Biological Data

All data, including plant data identified during an LVI 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, when possible. All data generated by ROCs is validated again by WAS for data collected for SMP, WMS for S&T, and other programs for which the data are collected.

9.3 Corrective Actions

Strategic Monitoring and Special Projects

Corrective action procedures are consistent with FA 3000 of the DEP SOPs. All personnel are responsible for assessing quality control measures 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 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 re-evaluated 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;

Data quality objectives for other sampling programs are documented in program quality manuals.

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

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

Status and Trend Monitoring Networks

Refer to [Quality Manual for Watershed Monitoring Section, Chapter 9.3](#)

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, F.A.C.

9.5 Audits

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

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

Additional audits of Status and Trend Network sampling are performed in accordance with [Quality Manual for Watershed Monitoring Section, Chapter 9.5](#)

10 Consumer Relations

10.1 Review of Proposed Work

Strategic Monitoring Plans are developed annually by WAS 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 Leads to discuss sampling schedules. Additionally, the Florida 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.