

Quality Plan for the Watershed Assessment Section

**Watershed Assessment Section
Florida Department of Environmental Protection
September 2023**

**2600 Blairstone Rd.
Tallahassee, FL 32399
www.FloridaDEP.gov**



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 all staff properly execute the procedures discussed in the plan.

X *Kevin J. O'Donnell*

Program Administrator

X *Jessica Mostyn*

Environmental Administrator

X *Jennifer Piacente*

Quality Assurance Officer

Introduction

The 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, meaning QA is a function distributed throughout our organization. One aspect of our program is to ensure department QA activities are carried out according to commitments made to the Environmental Protection Agency as enumerated in the DEP Quality Management Plan (QMP) (Draft Revision 9/2/08).

The DEP Secretary is committed to implementation of the quality assurance requirements in the QMP and as authorized at 403.0623 F.S. and Chapter 62-160 F.A.C. (the DEP QA Rule). It is the Secretary’s intent to carry out these obligations and requirements as detailed in the department’s QA Policy (Draft Revision January 2008).

To execute the components of the DEP QA Policy, our unit has 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 environmental data meet our established quality criteria.

Basic Elements of Our Quality Plan

Our Quality Plan explains both the process and criteria by which the quality system is managed. The plan discusses the specific QA duties assigned to staff, and is utilized as an instrument of internal communication to inform current and future staff of quality assurance activities. 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 its revisions 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 Policy and Quality Assurance Rule (62-160 F.A.C.). 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, tables, etc.

We expect all staff to understand and follow the procedures and criteria as discussed in this plan, and to carry out their assigned responsibilities for effective utilization of our quality system.

Policy Statement

It is our unit's policy to:

- Use scientifically valid and legally defensible data for our decisions affecting protection of the environment.
- 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.
- Properly train each individual 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, and submit findings to the Aquatic Ecology and Quality Assurance Section.

Ethics

All employees of the DEP Watershed Assessment Section (WAS) 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 Florida Department of Environmental Protection.

Organization and Responsibilities

Our unit resides in the Water Quality Evaluation and TMDL Program (WQETP) within the Division of Environmental Assessment and Restoration (DEAR). See the WAS organizational chart in Figure 1 in the Appendix.

The function of our unit involves implementing and reviewing the Identification of Impaired Surface Waters Rule (IWR), 62-303 Florida Administrative Code (F.A.C.). Surface water quality assessments are made for the entire state in accordance with the IWR and the Surface Water Quality Standards, Rule 62-302 F. A. C.

Responsibilities for existing staff are as follows:

The WAS is headed by the Environmental Administrator (EA), who is responsible for both the technical and administrative direction of the section and is committed to the QA program described in this plan. The EA is supported by Environmental Consultants, who manage all direct oversight of the implementation of the Impaired Waters Rule (IWR), Chapter 62-303, F.A.C., and coordinate assessment activities in various geographic areas throughout the state. The EA maintains the DEP Position Descriptions for all WAS employees.

A WAS staff member, Jennifer Piacente, has been designated as the Quality Assurance Officer (QAO), who coordinates and participates in the quality evaluation of program data and provides oversight to ensure staff perform their QA functions. The QAO may delegate some responsibilities to properly trained and qualified staff, when appropriate. At times the QAO conducts audits of internal and external data generators (lab and field). The QAO also ensures corrective actions are implemented for data non-conformance incidents as determined by evaluation of the data against our program's Data Quality Objectives. The QAO may also review audits performed by other work units within DEP to ensure quality data is used for assessment activities. Additionally, the QAO assists program managers in the development of the quality system and other logistical aspects of its implementation, such as coordinating associated training needs.

The QAO documents all program QA activities, including training, audits and corrective actions and provides this information to the DEP Aquatic Ecology and Quality Assurance Section on an annual basis. The QAO also reviews all biological data submitted to the WAS (this process is outlined in the Data Review section below) as external data providers would not be loading data into SBIO2.

All WAS staff participate in an on-going extensive data review process of both geographic and environmental data related tasks. Data review by section staff are facilitated and supported by additional efforts of the Data Management Section, also known as the Watershed Services Program. Additional data management and data storage are performed by the Environmental Consultants. All WAS staff contribute to the review

of data used to support assessment decisions in the area of the state within the scope of their responsibility.

Our program staff routinely carry out the following duties: data collection, data upload into the Laboratory Information Management System (LIMS) Data Merge Tool (DMT), the State Biological Database (SBIO2), and the Watershed Information Network (WIN) (previously Florida STORET (STOrage and RETrieval)), data usability evaluation, data interpretation in the form of water quality assessments, and the generation of DEP work products in a manner that ensures scientific defensibility and adherence to DEP rules and policies. Our products include assessment lists of impaired waters, Impaired Waters Rule databases, and Geographic Information Systems (GIS) layers. Additionally, WAS staff compile the sampling results for federal and state reporting requirements and public distribution. WAS submits all samples for analysis to the DEP Laboratory.

Program staff provide feedback to the program QAO for improving the program quality system.

- The WAS is configured in regional areas of the state so any staff member can act as liaison with other units, data providers, data consumers or other external parties concerning QA matters.
- Each staff member potentially answers public or external technical inquiries about data interpretation, approved procedures, suspected QA problems, site-specific issues, etc.

Our unit's administrator, Jessica Mostyn, ensures this quality system is fully operational within our program, designates our QAO, and provides general oversight. She also evaluates the above Data Quality Objectives and Data Quality Indicators to ensure they meet our program's needs, and periodically evaluates the effectiveness of staff's data quality activities, including reviewing audit results. She evaluates corrective action policies and procedures to be implemented when data do not meet program Data Quality Objectives. She discusses data quality issues such as audit results with the QAO and reviews the annual Quality Assurance Report to the Secretary.

An organizational chart is presented in Figure 1 in the Appendix.

Training

All personnel are properly trained to perform their duties. Supervisors periodically assess staff to ensure their performance conforms with the policies and procedures of our unit. Any trainings staff complete for their job duties each year are tracked using an internal spreadsheet.

All WAS employees are required to annually review the *SMP Guidance 2020* document (available on the network here <\\publicfiles\pubfds\DEAR\WQAPmonitoring\StrategicMonitoring\Guidance>) and all staff (WAS, DEP ROC, and contracted staff) who are responsible for Strategic

Monitoring sample collection must routinely utilize the Strategic Monitoring Checklist (Figure 22 in Appendix).

Field samplers conducting a Habitat Assessment (HA), Stream Condition Index (SCI), and/or Lake Vegetation Index (LVI) are required to have specific training and demonstrate proficiency due to the expert judgment exercised during field sampling. Individuals conducting an HA must train with qualified DEP staff (via workshops and participating in field sampling) and remain in “pass” status for field performance tests. Training is conducted using the Habitat Assessment Training Checklist (FD 9000-34). Habitat Assessment testing is conducted at select streams/rivers 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.

Field samplers conducting SCI sampling must train with qualified DEP staff (via workshops and participating in field sampling) and pass an online SCI knowledge test and field performance 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 is conducted using the SCI Training Checklist (FD 9000-35). SCI audits are administered by the Water Quality Standards Program. At all times, a minimum of one sampler from each sampling team must be in pass status in order to collect an SCI sample.

Field samplers conducting LVI sampling must pass an online plant identification test administered by the Aquatic Ecology and Quality Assurance Section (AEQAS) each year. In addition, samplers must participate and pass an LVI team test every two years. The LVI team test consists of performing an LVI in accordance to DEP SOPs (LVI 1000) at a specific lake chosen by AEQAS. The WAS team consists of all field sampling members. At all times, a minimum of one sampler conducting the LVI must be in pass status for both proficiencies in order to perform an LVI.

Additionally, there are non-required online tests available for Rapid Periphyton Survey (RPS) and Linear Vegetation Survey (LVS). Though there are currently no certifications for these methods, taking the online tests are highly recommended to show proficiency.

Field samplers are also encouraged to obtain training on Global Navigation Satellite System (GNSS) / Global Positioning System (GPS) devices, Class I Watercraft and Trailer Operation (only necessary to act as a boat operator or drive a vehicle towing a boat), CPR/First Aid, and attend the annual safety training webinar series offered by the WQMP (Water Quality Monitoring Program).

Field samplers conducting water quality sampling must be trained by proficient staff and demonstrate proficiency for all water quality sampling procedures performed by the WAS in adherence to the DEAR Apprenticeship Program Requirements before independently collecting samples for WAS projects. The Apprenticeship Program

SharePoint website can be found here:

<https://floridadep.sharepoint.com/dear/wqst/Shared%20Documents/Forms/By%20Training%20Type.aspx>. A list of all sampling personnel and their respective water quality sampling training is maintained internally within the Section and their training is consistent with FA 3100. Furthermore, training records are maintained on each WAS employee who is trained in skills that are commensurate with their responsibilities (including non-field related trainings).

Sampling Design and Procedures

To achieve the data sufficiency requirements necessary for basin assessments, the WAS develops Strategic Monitoring Plans (SMP) each fall prior to the year of sampling. By prioritizing monitoring efforts, the department can contribute to ongoing sampling efforts and focus on collecting data where there may be shortfalls. These activities are carried out by seven Regional Operation Centers (ROCs) located throughout the state and by staff in the WAS. This extensive monitoring effort is accomplished through coordination with water management districts, city and county governments, and other organizations. The current Strategic Monitoring Plans for each region of the state can be found at <https://floridadep.gov/dear/watershed-assessment-section/content/strategic-monitoring-plans>.

The primary objective of the SMP is to ensure that all waters on the Planning List and Study List have sufficient data to be assessed using the IWR methodology. This data is used to assess waterbody health and to develop and implement TMDLs. Sampling is based upon specific parameters for each particular waterbody (WBID). For detailed explanation of required sampling regiments, please read *Strategic Monitoring Program Sampling Manual (SMP Guidance 2020)*. Additionally, the WAS Strategic Monitoring procedures can be found in the Appendix of the SMP Sampling Manual (Strategic Monitoring Checklist).

Successful implementation of our program relies on valid data, which begins with proper sampling. Therefore, our unit performs the following activities concerning sampling:

- Curtis Musson designs sampling plans via the SMP and WAS staff rotate scheduled field work.
- All WAS staff are responsible for reviewing DEP SOPs for compliance with QA plans and requirements.
- Each Environmental Specialist manages or conducts sampling, field-testing and associated support operations. Curtis Musson and other Environmental Consultants have participated in field work when there was a need, and each Specialist with an interest can become Stream Condition Index (SCI) and Habitat Assessment (HA) Certified in order to collect biological samples.
- The WAS SMP Data Entry and Quality Control Process is outlined below:

Internal (WAS) Sampling Process

Field samplers (potentially any member of WAS):

- Calibrate the YSI meter the morning of the sampling event and record the calibration into the YSI calibration log before going out into the field.
- Perform an initial calibration verification (ICV) immediately after each parameter is calibrated and record it in the YSI calibration record.
 - There is a 3-point calibration for pH with 7.0, 4.0, and 10.0 standard buffers.
 - Calibration requirements are consistent with other WQMP Sections. See Table 1 in the Appendix for a summary of the calibration requirements for instruments used to collect field data.
- Perform a continuing calibration verification (CCV) on the YSI after returning from the field. If the calibration does not pass, the parameter should be “J” qualified.
- Ensure quantitative and chronological bracketing requirements for each field parameter are met for the sampling event. If bracketing requirements are not met, the parameter should be “J” qualified.
- Note any “J” qualified parameters on the YSI calibration log and field sheets if the continuing calibration verification (CCV) does not pass.
- Download completed field sheets from OneDrive and place them in the “[FIELD SHEETS TO BE PROCESSED](#)” folder (01_Put_In_LIMS_DMT_Add_Bio_FieldSheets) in the [Strategic Monitoring Folder](#) on the network.
- Ensure field sheets are completely and accurately filled out.
- Publish SMP Survey 123 updates as necessary.

Allyson Reinert

- Enters field parameter results into the LIMS Data Merge Tool (DMT) using the [LIMS Data Entry Process](#) document.
- Notes any “J” qualified parameters and adds an appropriate comment for the qualifier in the DMT.
- Sets up SBIO station visits if biology is collected (HA, LVS, RPS, SCI, & LVI).
- Enters biology into SBIO2.
- Records the SBIO ID, Macrophyte ID, and RPS ID on all field sheets (as applicable).
- Ensures field sheets are completely and accurately filled out.
- Verifies data was entered by initialing and dating each field sheet
- Scans bioassessment field sheets and calibration records and merges with Chain of Custody and Field Sheet PDFs from tablet. Moves merged PDF to 02_Needs QC folder, and notifies data reviewer (Gus Fischer) when data entry is complete.
- Ensures columns A-Q & T in the [WAS Sampling Tracker](#) are populated appropriately.
- Ensures columns N-BV in WAS SMP tracker are populated appropriately.

Gus Fischer

- QC's data entered into the LIMS DMT and SBIO2 (if applicable).
- Ensures field sheets are completely and accurately filled out.
- Corrects any mistakes made in the data entry process.
- Verifies data QC'd by initialing and dating each field sheet and rescanning signed field sheet.
- Fills out columns R, S, and U in the [WAS Sampling Tracker](#).
- Moves field sheets to either the [03_SBIO_Needs_To_Be_Authorized folder or the 04_ForDave_Upload_To_WIN](#) folder depending on the type of data that is collected (WQ or biology).). If biology data was collected, the field sheets are moved to the 03_SBIO_Needs_To_Be_Authorized folder, Curtis authorizes the SBIO data and moves the field sheets to the 04_ForDave_Upload_To_WIN folder and notifies David sampling events are ready for upload. If only WQ data is collected, Gus will move the field sheets to the 04_ForDave_Upload_To_WIN folder and notifies David sampling events are ready for upload.

David Tyler

- Uploads data into the WIN (previously STORET).
- Fills out columns V and W in the WAS [Sampling Tracker](#).
- When David is finished, he notifies Gus who will put the field sheets, site photos, and calibration logs for the sampling event in their final destination:
[\\publicfiles\PUBFDS\DEAR\WQAPmonitoring\StrategicMonitoring](#).
- David also schedules LIMS sampling events for Aquatic Preserves (Coupon Bight, Crystal River, GTM, and St. Joe Bay); reviews the calibration logs, adds any necessary qualifier field codes to the DMT entry, and uploads the data into the WIN for Aquatic Preserves (Coupon Bight, Crystal River-Big Bend, GTM, Rookery Bay, and St. Joe Bay).

WAS Sampling Roles

In addition to the sampling coordinator (Allyson Reinert), each sampling event will have a designated team lead and field safety officer. The responsibilities for each of these designated roles are outlined below.

Sampling Coordinator (Allyson Reinert): The primary responsibility of the sampling coordinator is to work with the team lead and field safety officer to ensure everything required for the sampling event is available. The sampling coordinator is responsible for scheduling trips (including dates and staff), ordering sampling kits (at least two weeks prior to the event) and picking up coolers from receiving, making sure sampling kits are packed correctly, inputting sampling event into the Lab Allocation Sample Tracker (LAST), and request labels from Curtis for bottles.

Team Lead (Any member participating in sampling event): Prior to the sampling event, the team lead is responsible for obtaining site information and directions, contacting

homeowners (if necessary), reserving trucks and boats (if applicable), requesting travel approval for the team, and checking with the Field Safety Officer and Sampling Coordinator to ensure necessary supplies are prepared for the sampling event. The team lead is also responsible for submitting samples to the lab and ensuring the lab submittal form and chain of custody is completed appropriately. Finally, upon completion of the sampling event, the team lead is responsible for cataloging photos taken during the sampling event, entering sampling information into the sampling tracker, and filing field sheets and photos into the appropriate folders for data entry.

Field Safety Officer (Any member participating in sampling event): The field safety officer should be CPR/First Aid certified and Boat and Trailer certified (if applicable). Prior to and during the sampling event, the field safety officer is responsible for tracking weather and water levels and will make the decision to call off the event if necessary, ensures a First Aid Kit and any necessary safety items (pfds, whistle, etc.) are current and packed, makes sure trailer lights are in working order, and files a Float Plan if a boat or canoe is being used for the sampling event. The Field Safety Officer must notify the Float Plan contact once the team is off the water and then again when the team returns to the office.

Equipment and Instruments

All equipment (and associated standards/buffers) used and maintained by the WAS for calibration procedures are based on procedures outlined in the DEP SOPs (DEP-SOP-001/01 FT 1000, FT 1100, FT 1200, FT 1300, FT 1400, FT 1500, and FT 1600) and meet all DEP SOP specifications for accuracy, reproducibility and design.

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.

All standards and buffers used in calibration procedures are documented in a logbook and maintained in an Excel Spreadsheet by Tallahassee ROC staff. The acceptability of field supplies and equipment are specified in FC 1001, FC 1002, FD 2000, FT 1000 and the FT series of the DEP SOP. 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 are traceable to each instrument. The field meter calibration acceptance criteria are available in Table 1 in the Appendix. The quarterly temperature and depth verifications are recorded in a logbook and stored in the QAO's office.

Equipment Maintenance

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 logbooks. All equipment cleaning/decontamination is based on DEP SOPs (DEP-SOP-FS 1001 and FC 1000). WAS uses and maintains one YSI meter. Calibration standards, supplies, and consumables are purchased by the Tallahassee ROC staff. All instrument and equipment maintenance are based on recommendations made in the individual FT series of the DEP SOPs and manufacturer recommendations.

Hazardous Waste Disposal

Waste disposal is consistent with FS 1011 of the DEP SOPs.

Equipment

All field equipment, sampling vehicles, and vessels are stored in the Jerry Brooks Environmental Laboratory Building (C-Building). Any combination (or all) of the equipment listed below may be used by WAS for surface water sample collection:

- Van Dorn sampler (or similar)
- Secchi disk
- Measuring tape
- Compass
- Depth recorder
- Cooler and ice
- Tablet
- YSI multi-probe (or similar) and all associated standards and buffers
- GPS equipment (Trimble, Garmin, data logger)
- Additional non-equipment supplies (cleaning materials, buckets, gloves, filters, syringes, preservatives, brushes, camera, etc.)

Any combination (or all) of the equipment listed below may be used for biological sampling; such as for benthic macroinvertebrates (Stream Condition Index), macrophytes (Linear Vegetation Survey and Lake Vegetation Index) and periphyton sampling (Rapid Periphyton Survey):

- D-Frame Dipnet with #30 mesh and handle marked in 0.1m increments
- Two 4-Liter wide-mouth plastic jugs
- Buffered formalin
- Brush
- Permanent Marker
- 100 Meter Tape
- Flagging Tape
- Secchi Disk
- Aquatic & wetland plant identification manuals
- Boat, canoe, or gheenoe (if non-wadeable site)

- Plastic bags
- Cooler and ice
- Linear Vegetation Survey Field Sheet (FD 9000-32)
- Completed Physical/Chemical Characterization Field Sheet (FD 9000-3)
- Completed Stream/River Habitat Sketch Sheet (FD 9000-4)
- Completed Stream/River Habitat Assessment Field Sheet (FD 9000-5)
- Ruler to measure a 10 cm distance
- Rapid Periphyton Survey Field Sheet (FD 9000-25)
- Spherical Densiometer (concave or convex)
- Personal Floating Devices
- Paddles
- Frotus
- Aquascope
- GPS equipment (Trimble, data logger)
- Hand Lens
- Binoculars
- Lake Vegetation Index Field Sheet (FD 9000-27)
- Completed Lake Observation Field Sheet (FD 9000-31)

Data Review

Our program understands the need to evaluate the quality of environmental data prior to making decisions. We conduct the following review procedures to determine the usability of data for determination of use support for state surface waters. These procedures are based on our established Data Quality Objectives and Data Quality Indicators, and incorporate the concepts and criteria found in DEP's "Process for Assessing Data Usability," DEP-EA-001/07. The WAS reviews and assesses the quality of the data being generated by employing quality control measures for both field and laboratory parameters.

WIN Anomalies

If a monitoring location or data point from the WIN is encountered with incorrect or questionable data/information, an anomaly is created to alert the data provider. To create an anomaly, the following procedure is followed:

- Log in to the WIN using your DEP login information
- From the menu choose: Manage Data → Migrated Data → Search Data
- Using the Search Dialog find the Monitoring Location or Data Result in Question
- Click the link for "Mon Loc ID" or "DEP Result ID"
- Click the green "Add Anomaly" exclamation point
- Choose the most appropriate "Anomaly Flag" and provide any additional information under "Findings"

- NOTE: if the error affects multiple records, contact the appropriate WIN coordinator

Data Reduction

There is relatively little data reduction required for the metered parameters measured by the WAS. Most parameters (dissolved oxygen, temperature, conductivity, pH, salinity, and water level) are read directly from the instrument and entered onto the field data sheet. Each field sheet includes the name of the sampling team members (not initials) and the role they played in the field (WQ Measurements, Sample Collection, Documentation, Preservation, Preservation Check). Data recorded on field sheets are uploaded to the appropriate database (LIMS DMT or SBIO2) by field staff. They are then scanned for recordkeeping and to aide verification by a second staff member.

Data Verification

Raw field data are reviewed by the lead sampler and project manager. Field logs and previously collected field data are reviewed for obvious problems or errors.

The field samplers and SMP Coordinator are responsible for confirming the results of each analytical determination have all associated QC measurements and the acceptance criteria are met and documented according to protocol. The field samplers and SMP Coordinator are responsible for verifying calculations, completing sample preparation, calibration, analysis and instrument logs, and completing all internal custody documentation.

The data verification procedures consist of the QC validations and calculations checks discussed in the DEP Laboratory Quality Manual. Samples with G, N, H, L, O, Q (except microbiological results), V, Y, and ? data qualifiers will be excluded for assessment and resampled as needed.

Any QC issues, not related to fatal qualifiers, discovered during the assessment process are noted in an internal spreadsheet for each cycle.

Data Validation

After chemistry and biology lab results are authorized by the lab managers, field readings are entered into the LIMS DMT, reviewed by WAS staff, and uploaded to the WIN. Specific data correction requests are submitted to the WIN/STORET Manager or appropriate Coordinator. Any additional problems identified with the data should be documented in the project comments.

Data Use for Impaired Waters Assessment

The function of our unit involves conducting and/or reviewing IWR assessments as part of the state's waterbody restoration program for impaired waters. For a detailed description of how water quality data collected for the identification of impaired surface waters of the state is used in the impaired waters assessment, please see the biennial Integrated Water Quality Assessment for Florida: 305(b) Report and 303(d) List Update available on the section's webpage at: <https://floridadep.gov/dear/dear/content/integrated-water-quality-assessment-florida#pastIR>

Additional information on the use of water quality data in the impaired waters assessment is described EPA's webpage: <https://www.epa.gov/tmdl/impaired-waters-and-tmdls-southeast-region-4>

Quality Control Measures

WAS uses several quality control measures to ensure high-quality data are collected and analyzed. Quality control samples assess the accuracy and precision of sampling and analytical 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. These quality control measures apply to data collected by WAS staff but cannot be validated for all water quality data collected by other sampling entities that may potentially be used in the Impaired Waters assessment. Each of these entities is responsible for adhering to the DEP QA Rule and SOPs as data providers to the agency.

Field Quality Control

Sampling personnel collect and submit three types of blanks to the DEP Laboratory based on the type of equipment used to collect water chemistry samples. All blanks collected are based on the number of samples collected for a specific project over a specific period of time (typically 5%). All blanks are collected using analyte-free (de-ionized) water in the same manner as water chemistry samples. Equipment blanks are collected each time an intermediary device is used to collect a sample (e.g. horizontal sampler or ponar dredge). Field blanks are collected 5% of the total samples for the year (1 in 20 samples at least) or at least once every six months, whichever is greater. Duplicate samples may be collected for special projects at the same frequency as field blanks (5% of the year or once every 6 months).

Laboratory Quality Control

In addition to the extensive quality control measures the DEP Laboratory uses internally, the WAS is available to participate in evaluating the quality of the data being generated by the laboratory.

Quality Control Criteria

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

For all blank samples submitted to the lab, results must meet specifications detailed in the [DEP Laboratory Quality Manual](#). Please refer to the DEP laboratory Quality Manual for laboratory guidelines concerning corrective action.

Specific QC measures that initiate corrective action and the types of action that will be taken are listed in Table 2 in the Appendix. Corrective action procedures are consistent with FA 3000 of the DEP SOPs.

External Data

On occasion WAS staff will enter Field Data into LIMS DMT from external entities when they are collecting data for DEP. The process for evaluating representativeness and usability of biological data submitted to the WAS is outlined below.

External Biology Data Review Process

- 1) A provider will submit an email with bioassessment data.
 - a. The email is usually received by Kevin O'Donnell via the prompt on the website.
 - b. Kevin responds to the data provider thanking them for submitting data and provides a biology template to be filled out. Included in the response is a statement reminding the provider the data needs to pass a level of QA/QC before it can be used in the next IWR Run.
 - c. The data is forwarded to Raymond Stuart for Initial QA/QC.
- 2) Data are placed in the **Submitted Data** folder on the network and Raymond Stuart completes the following checks.
 - i. All required information has been submitted including the most recent version of the Bio_Data_Template, field sheets, and LVS/LVI calculator(s) if applicable. If any of these items are not submitted, the data provider is contacted to request additional files.
 - ii. All items in the template are filled out correctly and completely.
 1. Ensures Org ID is correct and creates one if they are a new data provider (not in the WIN).
 2. Ensures data is in the correct format (i.e. negative is in front of longitude)
 - iii. Checks all stations in the template.
 1. If it is an existing station, he checks to see if the station is assigned to a WBID and that it matches the attributes of the existing station.
 2. If it is a new station, he reviews the station in GIS and checks the station name, lat/longs and WBID for accuracy.

- a. If there are no assigned stations nearby or are unassigned stations nearby then the station info is sent to staff responsible for the basin to determine if the station is appropriate for Biology.
 - iv. Checks proficiency status of samplers in Bioassessment Method Proficiency Registry. If the sampler is not current or not present in registry Raymond contacts staff in the Aquatic Ecology and Quality Assurance Section for guidance.
- 3) Data from the submitted template are formatted for and entered into the *ExternalBioData* spreadsheet and initial QA/QC is documented (**STATION QA RESULT, STATION QA'D BY (3 INITIALS), STATION QA DATE, STATION QA COMMENT**).
 - a. If the data fails Raymond's initial QA/QC check, the WAS EA and PA are contacted to determine how to proceed. Once Raymond completes the initial QA checks and initial QA passes, he places the data in the **To Be QA'd** folder.
- 4) Jennifer completes final QA Review by populating the **FINAL QA RESULT (PASS/FAIL), QA'D BY (3 INITIALS), QA DATE, and FINAL QA COMMENT** columns in *ExternalBioData* spreadsheet and places the data in the appropriate location within the **QA Complete** folder.
 - a. [Checklists](#) are used to determine when data Pass/Fail the Final QA check.

Passing external bioassessment data is normalized and appended to the biology assessment table.

Documentation

Sample documentation is a critical data quality objective of the WAS field surveys. Data gathered on these projects are entered into LIMS, WIN, and SBIO2 and must be properly linked to historical data, i.e. updates shall be made to existing station identifications (e.g. historical STORET ID). The WIN database is also a source of public information and is used for a variety of purposes. The data must be accurate to avoid incorrect evaluations and decisions on the state's water resources. All DEP WAS documentation requirements are based on the DEP SOPs cited in the QA Rule Chapter 62-160, available at: <https://www.flrules.org/gateway/ChapterHome.asp?Chapter=62-160>.

Generation, Preservation and Storage of Records

Sample documentation begins in the DEP Laboratory. A label is placed on each container with the request (RQ) number, the major analyte group, a notation if filtration is required, and the preservation method.

All field documentation is recorded on appropriate field sheets or in Survey123 using a tablet, Samplers are required to ensure the most current versions are used.

All paper documentation records must be recorded in ink, or pencil if using waterproof paper. Erasing or obliteration of records is not permitted. Corrections are made with a single strikethrough line through the error, so it is still legible, and the initials of the individual performing the correction. All documentation records are required to be legible.

All documentation requirements regarding initial activities performed by the Laboratory (container preparation, supplying sampling kits, RQ information, etc.) are generated, preserved and stored internally by appropriate lab personnel.

All physical and electronic documentation regarding sampling procedures are generated, preserved and stored by the DEP WAS QAO, the WAS EA, or the assigned designee.

All documentation regarding data management and review are generated, preserved and stored by Philip Homann in the appropriate database software programs.

Documentation Control and Maintenance

All documentation generated by the WAS is controlled and maintained in essentially two manners. 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. Furthermore, all documentation contains documentation control blocks such as page numbers and section headings used to identify completeness. Current documents such as standard operating procedures shall be followed. Ensuring the use of current procedures is consistent with FA 1000, FC 1000 and FD 1000 of the DEP SOPs and Rule 62-160.210 F.A.C.

Types of Documentation/Reports Generated/Record Storage and Archiving

The types of documentation and reports generated by WAS are listed below. Record keeping practices are consistent with Rules 62-160.240(1) and 62-160.340(1), F.A.C., and FD 1000 of the DEP SOPs.

Documentation related to Field Surveys includes

- field sheets (ground water, surface water, sediment)
- chain of custody sheets
- labels
- digital photos
- permission forms
- logbooks (calibration, standards and buffers, equipment maintenance and equipment cleaning)
- inventory sheets
- field audit forms
- float plans

Reports

- Quality Assurance Reports
- 303(d) IWR Lists
- 305(b) Integrated Reports to satisfy section 106 reporting requirements to EPA
- TMDL Report input (specifically Chapter 2 Description of Applicable Water Quality Standards and Pollutants of Concern)
- TMDL Not Needed (for example, 4c Natural Condition Documentation)
- Annual QA Report
- Reasonable Assurance Reports (RA Plan)

Storage and Archiving:

All records shall be retained for at least 5 years after the completion of the project. All data will be maintained in hard copy form and/or electronically. Hard copies are typically kept in the WAS project files (office storage). Data from very large projects will be kept in the project files for at least three years and then archived in the department's archive file system (warehouse).

Equipment

- Temperature Verification Logbook
- Depth Verification Logbook
- Maintenance Logbook

Sample Identification and Data Integrity

Procedures to ensure accurate sample identification begin with proper sample nomenclature. Sample custody is consistent with and follows the DEP SOPs.

Once stations and samples are properly named, accurate sample identification continues with the samples in the LIMS. The sample identification process continues with additional documentation procedures involving the field sheets and custody sheets by including site labels on each form. Accurate sample identification and data integrity remains intact throughout the data review and data analysis process. Refer to the [DEP Laboratory Quality Manual](#) for specific details regarding scheduling.

Confidentiality

All records and documents generated by the DEP WAS (except those associated with private property landowners 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.

Contract Management

Our program ensures the DEP contracts we administer are properly managed to assure appropriate data quality. The WAS does not currently have any contracts; however, there are two purchase orders the WAS manages for fish sampling by the Fish and Wildlife Conservation (FWC) and four Shellfish Environmental Assessment Section (SEAS) offices (Apalachicola, Cedar Key, Panama City, & Melbourne (Palm Bay)) and four Aquatic Preserve groups (Big Bend, Guana Tolomato Matanzas (NERR), Rookery Bay, & Central Panhandle) that collect data (field parameters and bottle samples) for WAS. Each fiscal year, the Scope of Work for all contracts are reviewed for accuracy, budget allotment, deliverable quarterly reports, and final invoice.

As we receive results from these entities sampling under our purchase order agreements, we review their submissions with field sheet and records reviews. Data are uploaded under the WAS organization code (21FLWQA). We have had to implement corrective actions in the past such as: communicate the correct procedures, qualify data or request a resample, and we have requested a formal QA training for the entity from the Aquatic Ecology and Quality Assurance Section (AEQAS) in the past.

Audits and Corrective Actions

Audits provide objective feedback concerning the effectiveness of our program's quality system and may identify areas in need of improvement. Therefore, our unit performs the following activities as discussed below:

Field Sampling Audits

In order to ensure that WAS collects accurate data, internal field sampling audits are performed by the QAO for WAS field staff. The frequency of these audits follows the refresher evaluations (Table 3) established by AEQAS and in the DEAR Apprenticeship Program. WAS also performs audits on organizations that collect data for the section (SEAS and Aquatic Preserve Groups) as needed.

Corrective Actions

The personnel responsible for assessing each quality control measure and initiating corrective action if needed are the designated quality assurance officers for the WAS and the DEP laboratory. All corrective action procedures are consistent with FA 3000 of the DEP SOPs. Specific QC measures that initiate corrective action and the types of action that will be taken are listed in **Table 2** below.

Notification of personnel of problems and corrective action can be on several levels. Generally, oral communication among QA Officers initiates corrective action. In the event a problem fails to be remedied, written communication among the QA Officers will serve official notice of the need for corrective action. Official memoranda between

project managers, who are also the contract managers, may be used if corrective action is not being implemented.

Reviews and audits of sampling operations by DEP personnel are welcome. Corrective action recommended by DEP personnel, depending on its nature, may be implemented immediately or at the beginning of a new year. Please refer to the DEP Laboratory Quality Manual for laboratory guidelines concerning corrective action.

Procedures for Reporting Data Deviations

The reporting of unacceptable results (failure of calibration, holding times, etc.) is consistent with the reporting requirements outlined in the FT 1000 series. Significant deviations from standard policies or practices of the WAS are reported to the data generators and documented with the review reports. Any samples prepared or analyzed beyond accepted holding times have a comment and a lab qualifier (remark code) associated with that sample. Similarly, the failures of any quality control checks are noted as comments with the data. All other significant observations that do not conform to accepted practices or policies are documented and reported along with analytical results. Those documents may be in the form of letters, interoffice memorandum, appendices to reports or comments in the WAS database.

Audits and Annual Report to Management

The Annual QA Report will be prepared by the WAS's QAO and submitted to the EA. Reports to management are consistent with the procedures outlined in FA 3250 of the DEP SOPs. The WAS QAO will provide information for the report identified in the list of items below. There are currently no regularly scheduled audits from external sources.

Consumer Relations

Review of Proposed Work

Proposed field sampling is scheduled under the supervision of the EA. Sampling staff are responsible for scheduling sampling events for current projects. An internal field sampling schedule is available to Section personnel on a calendar posted on the network drive. Proposed laboratory work is scheduled through LIMS. Review of work products includes internal agency review for reports written to satisfy requirements not limited to but including Sections 305(b), 106, and section 606 of the Clean Water Act. Further review of reports is provided by regional program administrators at EPA region 4 in Atlanta, Georgia. Other reports, assessment lists, maps, and presentations generated for public distribution are reviewed by immediate supervisors, internal program staff and Administrators.

Report Compilation

To provide the Secretary with information regarding DEP's ongoing QA efforts, our unit describes and compiles the results of all appropriate QA activities, and relays it to the Aquatic Ecology and Quality Assurance Section for an annual report.

Appendix

Figure 1. Watershed Assessment Section Organizational Chart

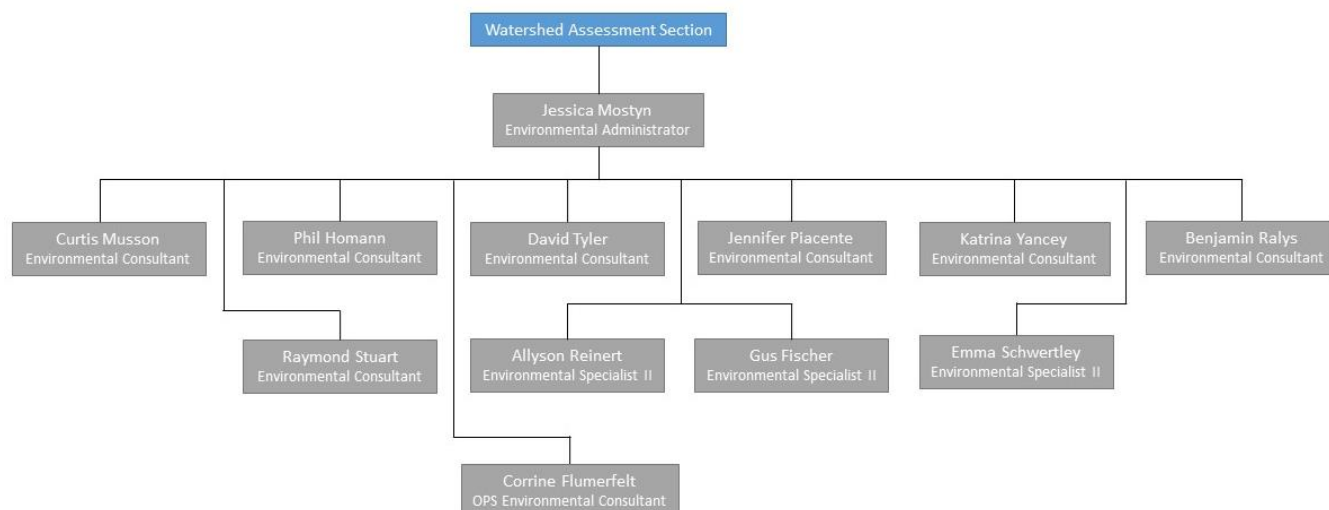


Table 1. Field Meter Calibration Requirements.

Parameter	Number of Decimal Places to Record	Calibration / Verification Frequency	Acceptance Criteria
pH (FT 1100)	All Digits Displayed	<u>Prior to Every Field Event:</u> IC, ICV, CCV.	± 0.2 SU
Specific Conductance (FT 1200)	All Digits Displayed	<u>Prior to Every Field Event:</u> IC, ICV, CCV.	± 5%
Dissolved Oxygen (mg/L) (FT 1500)	All Digits Displayed	<u>Prior to Every Field Event:</u> IC, ICV, CCV.	± 0.3 mg/L
Dissolved Oxygen (% saturation)	All Digits Displayed	N/A	N/A
Temperature (FT 1400)	All Digits Displayed	<u>Quarterly:</u> CCV.	± 0.5 °C
Turbidity (FT 1600)	All Digits Displayed	<u>Prior to Every Field Event:</u> CCV. <u>Quarterly:</u> IC, ICV, secondary standard verification.	0.1 – 10 NTU: ± 10%; 11 – 40 NTU: ± 8%; 41 – 100 NTU: ± 6.5%; > 100 NTU: ± 5%

Depth	<u>Calibrations & Verifications:</u> 2 for electronic devices; 1 for manual devices. <u>Field Measurements:</u> 2 if total depth < 0.6 m; 1 if total depth ≥ 0.6 m	<u>Prior to Every Field Event:</u> IC, ICV for Sondes. <u>Quarterly:</u> Verify Sondes & Electronic Devices. <u>Every 6 months:</u> Inspect Manual Devices.	<u>ICV:</u> ± 5% or ± 0.05 m, whichever is greater. <u>Electronic Device Verification:</u> ± 10%. <u>Line Increments:</u> ± 10%. <u>Total Length of Lines:</u> ± 5%.
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IC = initial calibration; ICV = initial calibration verification; CCV = continuing calibration verification; N/A = not applicable.

For all parameters except depth, report instrument reading to the resolution specified by the manufacturer (report all digits displayed). For depth, follow the rounding rule: if the next decimal place is 0, 1, 2, 3, or 4 the value is rounded down (e.g. 5.14 becomes 5.1), if the next decimal place is 5, 6, 7, 8, or 9 the value is rounded up (e.g. 5.15 becomes 5.2).

Figure 2. Strategic Monitoring Checklist

Before Sampling

- ☐ Create a WIN station
 - If applicable create a new SBIO station
- ☐ Create a WBID and Station folders in the appropriate year, organization, location in the Strategic Monitoring folder on the FTP.
- ☐ Create LIMS RQ
- ☐ Save RQ in the appropriate year, organization, RQ folder location in the Strategic Monitoring folder on the FTP.
- ☐ Print labels, print bioassessment field sheets if applicable, and update tablet survey if applicable.
- ☐ QC labels. Site name and WIN ID need to match WIN exactly. Use WIN ID for the Field ID.
- ☐ QC bioassessment or other paper field sheets(if using prefilled field sheets) Site name and WIN ID need to match WIN exactly.

During Sampling

- ☐ Fill out the SMP Survey completely and correctly. Sign completed survey and submit.
- ☐ Review Chain of Custody on the OneDrive Sheets to be processed folder for accuracy and completeness.

After Sampling

- ☐ Review field sheets. Makes sure they are filled out completely, correctly and signed.
- ☐ Update SMP sample tracker
- ☐ Scan and save meter calibration log
 - Scan/save daily calibration logs shortly after event
 - Scan/save temperature and depth calibration logs when applicable
- ☐ Enter field data into LIMS DMT
 - QC WIN Station ID, Field ID, Date, Time in LIMS DMT
 - Initial and date the field sheet
- ☐ Enter Bioassessment data in to SBIO2
 - Create Station Visit

- Update field sheet and bioassessment forms with SBIO ID
 - If LVS is less than 2 square meters check the LVS < 2 SQM box in the Station Visit module.
- Enter Habitat Assessment, RPS, PhysChem and Macrophyte data
 - Update field sheet and bioassessment forms with HA, RPS and Macrophyte ID
 - Note entered, Initial and date the bioassessment forms.
- Move pictures from the OneDrive to the appropriate year, organization, location in the Strategic Monitoring folder on the FTP.
- QC the information in the LIMS DMT, not to be done by the person that entered the data.
 - Field Data, WIN Station, Field ID, Date, Time
 - Initial and date the field sheet
- QC SBIO data. Not to be done by the person that entered the data
 - Note QC'ed, Initial and date bioassessment form.
- Scan/save field sheets, Submittal forms, CofC's, bioassessment forms and calibration log to the appropriate year, organization, WBID, Station folder in the Strategic Monitoring folder on the FTP.
 - Initial and date the field sheet
- Authorize SBIO data
 - Note Authorization, Initial and date bioassessment form.
- Merge LIMS data in to WIN
 - Initial and date the field sheet
- Verify data is in WIN
 - Under the correct Station
 - Under the correct WBID
 - Initial and date the field sheet
- File hard copies of field sheets and calibration logs for long term storage.

Table 2 – Corrective Action

QA/QC MEASURE	CRITERIA FOR CONCERN	CORRECTIVE ACTION
Field Blank	Any value > Method Detection Limit	Analyte-free water source and storage Equipment storage Sample custody
Equipment Blank	Any value > Method Detection Limit	Cleaning procedure Analyte-free water source and storage Equipment storage Sample custody
Performance (laboratory)	Results exceed targets for accuracy in Lab QA Manual	Lab notification

Table 3 – DEAR Program Training Requirements and Frequency

Sampling Activity	Applicable Training Checklists	Evaluation Activity	Evaluation Frequency
General Water Sampling	General Water Sampling Training Activities	• Training Review and Field Performance Audit	• Every 3 years
Surface Water Sampling	Surface Water Sampling Training Activities	• Training Review and Field Performance Audit	• Every 3 years
Ground Water Sampling	Ground Water Sampling Training Activities	• Training Review and Field Performance Audit	• Every 3 years
Wastewater Sampling	Wastewater Sampling Training Activities	• Training Review and Field Performance Audit	• Every 3 years
Sediments Sampling	Name of and link to applicable checklist(s)	• Training Review and Field Performance Audit	• Every 3 years
Flow	Flow Sampling Training Activities	• Training Review and Field Performance Audit	• Every 3 years
GPS	Name of and link to applicable checklist(s)	• Training Review and Field Performance Audit	• Every 3 years
HA	DEP-SOP-001/01 FA 5720	• Reference site evaluation test (field)	• Every 2 years
SCI	DEP-SOP-003/11 SCI 1000, Appendix SCI 1000-1	• SCI concepts & methods online test • Field audit & demonstration of technique • Field audit	• One time (initial) • One time (initial) • Every 5 years
RPS	DEP-SOP-001/01 FS 7230	TBD	TBD
LVI	DEP-SOP-003/11 LVI 1200	• Team proficiency test (field) • Online plant identification test	• Every 2 years • Every year
LVS	DEP-SOP-001/01 FS 7320	TBD	TBD